大成不銹鋼
TA CHEN STAINLESS



大成

Distributor

中華五金有限公司
CHUNG WAH METAL CO., LTD.



公司沿革與組織
COMPANY HISTORY & ORGANIZATION CHART

1986 投資新台幣壹仟陸佰萬元，外資持股97%，創立大成不銹鋼工業股份有限公司。

1987 台南一廠　不銹鋼管廠正式營業。

1989 南投廠正式營運，從事不銹鋼鑄造管配件之製造。

1989 投資成立美國大成國際股份有限公司，從事不銹鋼管及配件之買賣及螺絲、螺帽之生產。

1990 台南二廠　不銹鋼焊接管配件廠正式開始營運。

1993 裁剪廠正式開始商業運轉。

1994 南投廠遷廠及擴大營業，並更名為草屯廠。

1994 不銹鋼管及不銹鋼焊接管配件產品通過ISO-9002國際認證。

1994 增設球形閥門生產部門，正式對外營業。

1995 轉投資大陸石家庄冀台精密鑄造有限公司。

1996 不銹鋼管新廠擴建完成並開始量產。

1996 公司股票於10月24日正式掛牌上市。

DIMENSION AND WEIGHT



DIMENSIONS

unit : inch / lb

SCHEDULE	5S	10S	40S	80S	10	20	30	40	60	80	100	120	140	160	STD	XS	XXS
SIZE O.D.	Wall/In Wgt/Ft																
1/4" 0.540			0.088 0.43	0.119 0.54				0.088 0.43		0.119 0.54					0.088 0.43	0.119 0.54	
3/8" 0.675			0.091 0.57	0.126 0.76				0.091 0.57		0.126 0.76					0.091 0.57	0.126 0.76	
1/2" 0.840	0.065 0.54	0.083 0.68	0.109 0.86	0.147 1.10			0.095 0.76	0.109 0.86		0.147 1.10				0.188 1.32	0.109 0.86	0.147 1.10	0.294 1.73
3/4" 1.050	0.065 0.69	0.083 0.87	0.113 1.14	0.154 1.49			0.095 0.98	0.113 1.14		0.154 1.49				0.219 1.96	0.113 1.14	0.154 1.49	0.308 2.46
1" 1.315	0.065 0.88	0.109 1.42	0.133 1.69	0.179 2.19			0.114 1.48	0.133 1.69		0.179 2.19				0.250 2.87	0.133 1.69	0.179 2.19	0.358 3.69
1 1/4" 1.660	0.065 1.12	0.109 1.82	0.140 2.29	0.191 3.02			0.117 1.95	0.140 2.29		0.191 3.02				0.250 3.80	0.140 2.29	0.191 3.02	0.382 5.26
1 1/2" 1.900	0.065 1.29	0.109 2.10	0.145 2.74	0.200 3.67			0.125 2.39	0.145 2.74		0.200 3.67				0.281 4.90	0.145 2.74	0.200 3.67	0.400 6.47
2" 2.375	0.065 1.62	0.109 2.66	0.154 3.69	0.218 5.07			0.125 3.03	0.154 3.69		0.218 5.07				0.344 7.53	0.154 3.69	0.218 5.07	0.436 9.11
2 1/2" 2.875	0.083 2.50	0.120 3.56	0.203 5.85	0.276 7.73			0.188 5.45	0.203 5.85		0.276 7.73				0.375 10.11	0.203 5.85	0.276 7.73	0.552 13.82
3" 3.500	0.083 3.06	0.120 4.37	0.216 7.65	0.300 10.35			0.188 6.71	0.216 7.65		0.300 10.35				0.438 14.46	0.216 7.65	0.300 10.35	0.600 18.76
3 1/2" 4.000	0.083 3.50	0.120 5.02	0.226 9.19	0.318 12.62			0.188 7.73	0.226 9.19		0.318 12.62					0.226 9.19	0.318 12.62	
4" 4.500	0.083 3.95	0.120 5.67	0.237 10.89	0.337 15.12			0.188 8.74	0.237 10.89		0.337 15.12		0.438 19.18		0.531 22.72	0.237 10.89	0.337 15.12	0.674 27.8
5" 5.563	0.109 6.41	0.134 7.84	0.258 14.75	0.375 20.97				0.258 14.75		0.375 20.97		0.500 27.29		0.625 33.27	0.258 14.75	0.375 20.97	0.750 38.91
6" 6.625	0.109 7.66	0.134 9.38	0.280 19.15	0.432 28.84				0.280 19.15		0.432 28.84		0.562 36.73		0.719 45.78	0.280 19.15	0.432 28.84	0.864 53.66
8" 8.625	0.109 10.01	0.148 13.52	0.322 28.82	0.500 43.79		0.250 22.57	0.277 24.93	0.322 28.82	0.405 35.97	0.500 43.79	0.594 51.43	0.719 61.28	0.812 68.39	0.906 75.39	0.322 28.82	0.500 43.79	0.875 73.1
10" 10.750	0.134 15.34	0.165 18.83	0.365 40.86	0.500 55.25		0.250 28.3	0.307 34.56	0.365 40.86	0.500 55.25	0.594 65.03	0.719 77.75	0.844 90.13	1.000 105.11	1.125 116.73	0.365 40.86	0.500 55.25	1.000 105.11
12" 12.750	0.156 21.18	0.180 24.39	0.375 50.03	0.500 66.03		0.250 33.69	0.330 44.18	0.406 54.03	0.562 73.84	0.688 89.46	0.844 108.32	1.000 126.67	1.125 140.98	1.312 161.77	0.375 50.03	0.500 66.03	1.000 126.67
14" 14.000	0.156 23.28	0.188 27.99	*	**	0.250 37.06	0.312 46.04	0.375 55.08	0.438 64.03	0.594 85.84	0.750 107.13	0.938 132.08	1.094 152.2	1.250 171.81	1.406 190.88	0.375 55.08	0.500 72.77	
16" 16.000	0.165 28.17	0.188 32.05	*	**	0.250 42.45	0.312 52.76	0.375 63.16	0.500 83.55	0.656 108.51	0.844 137.89	1.031 166.37	1.219 194.23	1.438 225.73	1.594 247.54	0.375 63.16	0.500 83.55	
18" 18.000	0.165 31.72	0.188 36.10	*	**	0.250 47.84	0.312 59.49	0.438 82.92	0.562 105.65	0.750 139.47	0.938 172.52	1.156 209.9	1.375 246.42	1.562 276.79	1.781 311.39	0.375 71.25	0.500 94.33	
20" 20.000	0.188 40.15	0.218 46.49	*	**	0.250 53.23	0.375 79.33	0.500 105.11	0.594 124.26	0.812 167.96	1.031 210.82	1.281 258.49	1.500 299.15	1.750 344.29	1.969 382.72	0.375 79.33	0.500 105.11	
24" 24.000	0.218 55.89	0.250 64.01	*	**	0.250 64.01	0.375 95.50	0.562 142.00	0.688 172.9	0.969 240.58	1.219 299.36	1.531 370.83	1.812 433.41	2.062 487.65	2.344 547.21	0.375 95.50	0.500 126.67	
30" 30.000	0.250 80.18	0.312 99.85	*	**	0.312 98.85	0.500 159.01	0.625 197.91								0.375 119.76	0.500 159.01	
36" 36.000					0.312 120.03	0.500 191.35	0.625 238.34	0.750 285.00							0.375 144.01	0.500 191.35	

Highlighted Produced by Ta Chen Stainless Pipe Co, Ltd. *SEE STD WALL **SEE XS WALL

TYPE 316L SCHEDULES 5S, 10S ALLOWABLE WORKING PRESSURE

ALLOWABLE WORKING PRESSURES FOR A-312 WELDED PIPE

TYPE 316L
Schedules 5S, 10S

TEMPERATURE °F.			− 425 to 300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
MAX. STRESS			16700	15500	14400	13500	13200	12900	12600	12400	12100	11800	11500	11200	10800	10200	8800	6400	4700	3500	2500	1800	1300	1000
NOM. PIPE SIZE	SCH. NO.	NOM. WALL.	ALLOWABLE WORKING PRESSURES PSIG																					
½	5S	.065	1809	1679	1560	1463	1430	1398	1365	1343	1311	1278	1246	1213	1170	1105	953	693	509	379	271	195	141	108
	10S	.083	2310	2144	1992	1888	1826	1785	1743	1715	1674	1632	1591	1549	1494	1411	1217	885	650	484	346	249	180	138
¾	5S	.065	1447	1343	1248	1170	1144	1118	1092	1075	1049	1023	997	971	936	884	763	555	407	303	217	158	113	87
	10S	.083	1848	1715	1594	1494	1461	1428	1394	1372	1339	1306	1273	1239	1195	1129	974	708	520	387	277	199	144	111
1	5S	.065	1156	1073	997	934	913	893	672	858	837	817	796	775	747	706	609	443	325	242	173	125	90	69
	10S	.109	1938	1799	1671	1587	1532	1497	1462	1439	1404	1389	1335	1300	1253	1184	1021	743	545	406	290	209	151	116
1¼	5S	.065	915	850	789	740	724	707	691	680	663	647	630	614	592	559	482	351	258	192	137	55	71	55
	10S	.109	1535	1425	1324	1241	1213	1186	1158	1140	1112	1085	1057	1030	993	938	809	588	432	322	230	165	120	92
1½	5S	.065	800	742	690	647	632	618	603	594	580	565	551	538	517	489	421	307	225	168	120	86	62	48
	10S	.109	1341	1245	1157	1084	1060	1038	1012	996	972	948	924	900	887	819	707	514	377	281	201	145	104	80
2	5S	.065	640	594	552	517	506	494	483	475	464	452	441	429	414	391	337	245	180	134	96	69	50	38
	10S	.109	1073	996	925	867	848	829	810	797	777	758	739	720	694	655	565	411	302	225	161	116	84	64
2½	5S	.083	675	626	582	546	534	521	509	501	489	477	465	453	437	412	356	259	190	141	101	73	53	40
	10S	.120	976	906	841	789	771	754	736	725	707	690	672	654	631	596	514	374	275	205	146	105	76	58
3	5S	.083	554	515	478	448	438	428	418	412	402	392	382	372	359	339	292	212	156	116	83	60	43	33
	10S	.120	802	744	691	648	634	619	605	595	581	566	552	538	518	490	422	307	226	168	120	86	62	48
3½	5S	.083	485	450	418	392	383	375	366	360	352	343	334	325	314	296	256	186	137	102	73	52	38	29
	10S	.120	701	651	605	567	554	542	529	521	506	496	483	470	454	428	370	269	197	147	105	76	55	42
4	5S	.083	431	400	372	349	341	333	325	320	312	305	297	289	279	263	227	165	121	90	65	46	34	26
	10S	.120	623	579	538	504	493	482	470	463	452	441	429	418	403	381	329	239	175	131	93	67	49	37
5	5S	.109	458	425	395	370	362	354	346	340	332	324	315	307	296	280	241	176	129	96	69	49	36	27
	10S	.134	563	523	486	455	445	435	425	418	408	398	388	378	364	344	297	216	158	118	84	61	44	34
6	5S	.109	385	357	332	311	304	297	290	286	279	272	265	258	249	235	203	147	108	81	58	41	30	23
	10S	.134	473	439	408	362	374	365	357	351	343	334	326	317	306	289	249	181	133	99	71	51	37	28
8	5S	.109	295	274	255	239	234	228	223	219	214	209	203	198	191	180	158	113	83	62	44	32	23	18
	10S	.148	401	372	346	324	317	310	303	298	291	263	276	269	259	245	211	154	113	84	60	43	31	24
10	5S	.134	291	270	251	236	230	225	220	216	211	206	201	195	188	178	154	112	82	61	44	31	23	17
	10S	.165	359	333	309	290	284	277	271	266	260	254	247	241	232	219	189	138	101	75	54	39	28	21
12	5S	.156	286	266	247	231	226	221	216	212	207	202	197	192	185	175	151	110	81	60	43	31	22	17
	10S	.180	330	308	285	267	261	255	249	245	239	233	227	221	213	202	174	126	93	69	49	36	26	20
14	5S	.156	261	242	225	211	206	201	197	193	189	184	179	175	168	159	137	100	73	55	39	28	20	16
	10S	.188	314	291	271	254	248	243	237	233	227	222	216	211	203	192	165	120	88	66	47	34	24	19
16	5S	.165	241	224	208	195	191	186	182	179	175	170	168	162	156	147	127	92	68	51	36	26	19	14
	10S	.188	275	255	237	222	217	212	207	204	199	194	189	184	178	168	145	105	77	58	41	30	21	16
18	5S	.165	214	199	185	173	169	166	162	159	155	151	148	144	139	131	113	85	60	45	32	23	17	13
	10S	.188	244	227	211	197	193	189	184	181	177	173	168	164	158	149	129	94	69	51	37	26	19	15
20	5S	.188	220	204	190	178	174	170	166	163	159	155	151	147	142	134	116	84	62	46	33	24	17	13
	10S	.218	255	237	220	206	201	197	192	189	185	180	175	171	165	156	134	96	72	53	38	27	20	15
24	5S	.218	212	197	183	172	168	164	160	158	154	150	146	142	137	130	112	81	60	45	32	23	17	13
	10S	.250	244	226	210	197	193	188	184	181	176	172	168	163	158	149	128	93	69	51	36	26	19	15

The Allowable Stress Values used are as shown in Appendix "A" of ANSI B31.3-1993 for welded pipe to ASTM A-312 having a weld joint factor of .80.
Allowable Working Pressures shown for each size reflect the minus 12½% manufacturers wall tolerance.

TYPE 316 SCHEDULE 10S ALLOWABLE WORKING PRESSURE

ALLOWABLE WORKING PRESSURES FOR A-312 WELDED PIPE

TYPE 316 Schedule 10S

TEMPERATURE °F.			– 425 to 300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
MAX. STRESS			20000	19300	17900	17000	16700	16300	16100	15900	15700	15500	15400	15300	14500	12400	9600	7400	5500	4100	3100	2300	1700	1300
NOM. PIPE SIZE	SCH. NO.	NOM. WALL.	ALLOWABLE WORKING PRESSURES PSIG																					
½	10S	.083	2767	2670	2476	2352	2310	2255	2227	2200	2172	2144	2130	2117	2006	1715	1356	1024	761	587	429	318	235	180
¾	10S	.083	2213	2136	1981	1881	1848	1804	1782	1760	1737	1715	1704	1693	1605	1372	1085	819	609	454	343	255	188	144
1	10S	.109	2321	2240	2077	1973	1938	1892	1888	1845	1822	1799	1787	1775	1683	1439	1137	859	638	476	360	267	197	151
1¼	10S	.109	1839	1774	1646	1563	1535	1496	1480	1462	1443	1425	1416	1406	1333	1140	901	680	506	377	285	211	156	120
1½	10S	.109	1608	1550	1438	1365	1341	1309	1293	1277	1261	1245	1237	1229	1165	996	787	594	442	329	249	185	137	104
2	10S	.109	1285	1240	1150	1092	1073	1047	1034	1022	1009	996	969	983	932	797	630	475	353	263	199	148	109	84
2½	10S	.120	1169	1128	1046	993	976	952	941	929	917	906	900	894	847	725	573	432	321	240	181	134	99	76
3	10S	.120	960	926	859	816	802	782	773	763	754	744	739	734	696	595	470	355	264	197	149	110	82	62
3½	10S	.120	840	811	752	714	701	685	676	668	659	651	647	643	609	521	412	311	231	172	130	97	71	55
4	10S	.120	747	721	668	635	623	609	601	594	586	579	575	571	541	463	366	276	205	153	116	86	63	49
5	10S	.134	674	651	604	573	563	550	543	538	529	523	519	516	489	418	330	250	185	138	105	78	57	44
6	10S	.134	566	547	507	481	473	462	456	450	445	439	438	433	411	351	278	210	156	116	88	65	48	37
8	10S	.148	480	464	430	408	401	392	387	382	377	372	370	368	348	298	235	178	132	96	74	55	41	31
10	10S	.165	430	415	385	365	359	350	346	342	337	333	331	329	312	266	211	159	118	88	67	49	37	28
12	10S	.180	395	381	354	336	330	322	318	314	310	306	304	302	287	245	194	148	109	81	61	45	34	26
14	10S	.188	376	363	337	320	314	306	303	299	295	291	290	288	273	233	184	139	103	77	58	43	32	24
16	10S	.188	329	317	294	260	275	268	265	262	258	255	253	252	239	204	161	122	90	67	51	38	28	21
18	10S	.188	292	282	262	249	244	238	235	232	230	227	225	224	212	181	143	108	80	60	45	34	25	19
20	10S	.218	305	295	273	259	255	249	246	243	240	237	235	233	221	189	150	113	84	63	47	35	26	20
24	10S	.250	292	281	261	248	244	238	235	232	229	226	225	223	211	181	143	108	80	60	45	34	25	19

The Allowable Stress Values used are as shown in Appendix "A" of ANSI B31.3-1993 for welded pipe to ASTM A-312 having a weld joint factor of .80.
The Stress Values at all temperatures above 1000F apply only when the carbon is 0.04% or higher.

TYPE 316L SCHEDULES 40S, 80S ALLOWABLE WORKING PRESSURE

ALLOWABLE WORKING PRESSURES FOR A-312 WELDED PIPE

TYPE 316L Schedules 40S, 80S

TEMPERATURE °F.			− 425 to 300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
MAX. STRESS			16700	15500	14400	13500	13200	12900	12600	12400	12100	11800	11500	11200	10800	10200	8800	6400	4700	3500	2500	1800	1300	1000
NOM. PIPE SIZE	SCH. NO.	NOM. WALL.	ALLOWABLE WORKING PRESSURES PSIG																					
½	40S	.109	3034	2816	2616	2453	2398	2344	2289	2253	2198	2144	2089	2035	1962	1853	1599	1163	854	636	454	327	236	182
	80S	.147	4092	3796	3528	3306	3234	3161	3067	3038	2965	2891	2816	2744	2646	2499	2158	1568	1152	858	613	441	319	245
¾	40S	.113	2516	2335	2170	2034	1989	1944	1898	1888	1823	1778	1733	1687	1627	1537	1326	964	706	527	377	271	196	151
	80S	.154	3429	3183	2957	2772	2710	2649	2587	2546	2485	2423	2361	2300	2218	2094	1807	1314	965	719	513	370	267	205
1	40S	.133	2365	2195	2039	1912	1869	1827	1784	1756	1713	1671	1628	1586	1529	1444	1246	906	666	496	354	255	184	142
	80S	.179	3183	2954	2744	2573	2516	2458	2401	2363	2306	2249	2192	2134	2058	1944	1677	1220	896	667	476	343	248	191
1¼	40S	.140	1972	1830	1700	1594	1559	1523	1488	1464	1429	1393	1358	1322	1275	1204	1039	756	555	413	295	213	153	118
	80S	.191	2690	2497	2320	2175	2126	2078	2030	1997	1949	1901	1852	1804	1740	1643	1418	1031	757	564	403	290	209	161
1½	40S	.145	1784	1656	1539	1442	1410	1378	1346	1325	1293	1261	1229	1197	1154	1090	940	684	502	374	267	192	139	107
	80S	.200	2461	2284	2122	1969	1945	1901	1857	1827	1763	1739	1695	1651	1592	1503	1297	943	693	516	368	265	192	147
2	40S	.154	1516	1407	1307	1226	1198	1171	1144	1126	1098	1071	1044	1017	980	926	799	581	427	318	227	163	118	91
	80S	.218	2146	1992	1850	1735	1696	1658	1619	1593	1555	1516	1478	1439	1388	1311	1131	822	604	450	321	231	167	129
2½	40S	.203	1651	1532	1423	1335	1305	1275	1246	1226	1196	1166	1137	1107	1068	1008	670	633	465	346	247	178	129	99
	80S	.276	2244	2083	1935	1814	1774	1734	1693	1667	1626	1586	1548	1505	1452	1371	1183	860	632	470	336	242	175	134
3	40S	.216	1443	1339	1244	1166	1140	1115	1069	1071	1045	1020	994	968	933	881	760	553	406	302	216	156	112	86
	80S	.300	2004	1860	1728	1620	1584	1548	1512	1488	1452	1416	1380	1344	1296	1224	1056	766	564	420	300	216	156	120
3½	40S	.226	1321	1226	1139	1068	1044	1020	997	961	957	933	910	886	854	807	696	506	372	277	198	142	103	79
	80S	.318	1859	1725	1603	1503	1469	1438	1402	1380	1347	1313	1280	1247	1202	1135	979	712	523	390	278	200	145	111
4	40S	.237	1231	1143	1062	995	973	951	929	914	892	870	848	826	796	752	649	472	347	258	184	133	96	74
	80S	.337	1751	1625	1510	1415	1384	1352	1321	1300	1269	1237	1206	1174	1132	1069	923	671	493	367	262	189	138	105
5	40S	.258	1084	1006	935	877	857	838	818	805	786	766	747	727	701	662	571	416	305	227	162	117	84	65
	80S	.375	1576	1463	1359	1274	1248	1217	1189	1170	1142	1114	1085	1057	1019	963	830	604	444	330	236	170	123	94
6	40S	.280	988	917	852	799	781	763	746	734	716	698	680	663	639	604	521	379	278	207	148	107	77	59
	80S	.432	1525	1415	1315	1232	1205	1178	1150	1132	1105	1077	1050	1022	986	931	803	584	429	320	228	164	119	91
8	40S	.322	873	810	753	706	690	674	659	648	632	617	601	585	564	533	460	335	246	183	131	94	68	52
	80S	.500	1355	1258	1169	1096	1071	1047	1023	1006	962	958	933	909	877	826	714	519	381	284	203	146	106	81
10	40S	.385	794	737	885	842	627	613	599	589	575	561	547	532	513	485	418	304	223	166	119	86	62	48
	80S	.500	1087	1009	938	879	860	840	820	807	788	768	749	729	703	664	573	417	306	228	163	117	85	65
12	40S	.375	688	638	593	556	544	531	519	511	498	486	474	461	445	420	362	264	194	144	103	74	54	41
	80S	.500	917	851	791	741	725	708	692	681	664	648	631	615	593	560	483	351	258	192	137	99	71	55
14	40S	.375	626	581	540	506	495	484	473	465	454	443	431	420	405	383	330	240	176	131	94	68	49	38
	80S	.500	835	775	720	675	660	645	630	620	605	590	575	560	540	510	440	320	235	175	125	90	65	50
16	40S	.375	548	509	473	443	433	423	413	407	397	387	377	368	354	335	289	210	154	115	82	59	43	33
	80S	.500	731	678	630	591	576	564	551	543	529	516	503	490	473	446	385	260	206	153	109	79	57	44
18	40S	.375	487	452	420	394	385	376	388	362	353	344	335	327	315	298	257	187	137	102	73	53	38	29
	80S	.500	649	603	560	525	513	502	490	482	471	459	447	436	420	397	342	249	183	136	97	70	51	39
20	40S	.375	438	407	378	354	347	339	331	326	318	310	302	294	284	268	231	168	123	92	66	47	34	26
	80S	.500	585	543	504	473	462	452	441	434	424	413	403	392	378	357	306	224	165	123	88	63	46	35
24	40S	.375	365	339	315	295	289	282	276	271	265	258	252	245	236	223	193	140	103	77	55	39	28	22
	80S	.500	487	452	420	394	385	376	368	362	353	344	335	327	315	298	257	187	137	102	73	53	38	29

The Allowable Stress Values used are as shown in Appendix "A" of ANSI B31.3-1993 for welded pipe to ASTM A-312 having a weld joint factor of .80.
Allowable Working Pressures shown for each size reflect the minus 12½% manufacturers wall tolerance.

TYPE 316 SCHEDULES 40S, 80S ALLOWABLE WORKING PRESSURE

ALLOWABLE WORKING PRESSURES FOR A-312 WELDED PIPE

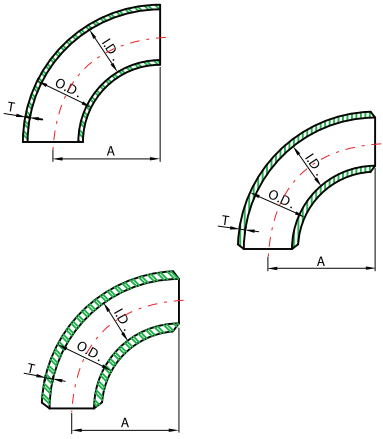
TYPE 316
Schedules 40S, 80S

TEMPERATURE °F.			− 425 to 300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
MAX. STRESS			20000	19300	17900	17000	16700	16300	16100	15900	15700	15500	15400	15300	14500	12400	9800	7400	5500	4100	3100	2300	1700	1300
NOM. PIPE SIZE	SCH. NO.	NOM. WALL.	ALLOWABLE WORKING PRESSURES PSIG																					
½	40S	.109	3633	3506	3252	3088	3034	2961	2925	2889	2652	2816	2798	2780	2634	2253	1780	1344	999	745	563	418	309	238
	80S	.147	4900	4729	4386	4165	4092	3994	3945	3896	3847	3798	3773	3749	3553	3038	2401	1813	1348	1005	760	564	417	319
¾	40S	.113	3013	2908	2697	2561	2516	2456	2426	2396	2365	2335	2320	2305	2185	1868	1477	1115	829	618	467	347	256	196
	80S	.154	4107	3963	3675	3491	3429	3347	3308	3265	3224	3183	3162	3142	2977	2546	2012	1519	1129	842	637	472	349	267
1	40S	.133	2832	2733	2535	2407	2365	2308	2280	2251	2223	2195	2161	2166	2053	1756	1368	1048	779	581	439	326	241	184
	80S	.179	3811	3678	3411	3240	3183	3106	3068	3030	2992	2954	2935	2916	2763	2383	1888	1410	1048	781	591	438	324	248
1¼	40S	.140	2361	2279	2113	2007	1972	1925	1901	1877	1854	1830	1818	1807	1712	1464	1157	874	649	484	366	272	201	153
	80S	.191	3222	3109	2883	2738	2690	2628	2593	2561	2529	2497	2481	2465	2336	1997	1579	1192	886	660	499	370	274	209
1½	40S	.145	2137	2062	1912	1816	1784	1742	1720	1699	1677	1656	1645	1635	1549	1325	1047	791	588	438	331	246	182	139
	80S	.200	2947	2844	2638	2505	2461	2402	2373	2343	2314	2284	2269	2255	2137	1827	1444	1091	811	604	457	339	251	192
2	40S	.154	1816	1752	1625	1543	1516	1480	1462	1443	1425	1407	1398	1389	1316	1126	890	672	499	372	281	209	154	118
	80S	.218	2570	2480	2300	2185	2146	2095	2069	2043	2018	1992	1979	1966	1863	1593	1259	951	707	527	398	296	218	167
2½	40S	.203	1977	1908	1769	1680	1651	1611	1592	1572	1552	1532	1522	1512	1433	1226	969	732	544	405	306	227	168	129
	80S	.276	2688	2594	2406	2285	2244	2191	2164	2137	2110	2083	2070	2056	1949	1667	1317	995	739	551	417	309	228	175
3	40S	.216	1728	1688	1547	1469	1443	1408	1391	1374	1356	1339	1331	1322	1253	1071	847	639	475	354	266	199	147	112
	80S	.300	2400	2316	2148	2040	2004	1956	1932	1908	1884	1860	1848	1836	1740	1488	1176	888	660	492	372	276	204	156
3½	40S	.226	1582	1527	1416	1345	1321	1289	1274	1258	1242	1226	1218	1210	1147	981	775	585	435	324	245	182	134	103
	80S	.318	2226	2146	1992	1892	1859	1814	1792	1770	1747	1725	1714	1703	1614	1360	1091	824	612	456	345	256	189	145
4	40S	.237	1475	1423	1320	1253	1231	1202	1187	1172	1158	1143	1135	1128	1069	914	723	546	406	302	229	170	125	96
	80S	.337	2097	2023	1877	1782	1751	1709	1688	1667	1646	1625	1615	1604	1520	1300	1027	776	577	430	325	241	178	136
5	40S	.258	1299	1253	1162	1104	1084	1058	1045	1032	1019	1006	1000	993	941	805	636	480	357	266	201	149	110	84
	80S	.375	1887	1821	1689	1604	1576	1538	1519	1501	1482	1463	1453	1444	1368	1170	925	698	519	387	293	217	160	123
6	40S	.280	1183	1142	1059	1006	988	964	953	941	929	917	911	905	858	734	580	438	325	243	183	138	101	77
	80S	.432	1826	1762	1634	1552	1525	1488	1470	1452	1433	1415	1406	1397	1324	1132	895	676	502	374	283	210	155	119
8	40S	.322	1045	1009	936	889	873	852	841	831	821	810	805	800	758	648	512	387	287	214	162	120	89	68
	80S	.500	1623	1566	1453	1380	1355	1323	1307	1290	1274	1258	1250	1242	1177	1006	795	601	446	333	252	187	138	106
10	40S	.365	951	917	851	808	794	775	765	758	746	737	732	727	689	589	466	352	261	195	147	109	81	62
	80S	.500	1302	1257	1166	1107	1087	1061	1048	1035	1022	1009	1003	996	944	807	638	482	358	287	202	150	111	85
12	40S	.375	824	795	737	700	688	671	663	655	646	638	634	630	597	511	404	305	226	169	128	95	70	54
	80S	.500	1098	1060	983	933	917	895	884	873	862	851	845	840	796	681	538	406	302	225	170	126	93	71
14	40S	.375	750	724	671	638	626	611	604	596	589	581	578	574	544	465	366	278	206	154	116	86	64	49
	80S	.500	1000	965	895	850	835	815	805	795	785	775	770	765	725	620	490	370	275	205	155	115	85	65
16	40S	.375	656	633	587	558	548	535	528	522	515	509	505	502	476	407	322	243	180	135	102	75	56	43
	80S	.500	875	844	783	744	731	713	704	696	687	678	674	669	634	543	429	324	241	179	136	101	74	57
18	40S	.375	583	563	522	496	487	475	470	464	458	452	449	446	423	362	266	216	160	120	90	67	50	38
	80S	.500	778	751	696	661	649	634	626	618	611	603	599	595	584	482	381	288	214	159	121	89	68	51
20	40S	.375	525	507	470	446	438	428	423	417	412	407	404	402	381	326	257	194	144	108	81	60	45	34
	80S	.500	700	676	627	595	585	571	564	557	550	543	539	536	508	434	343	259	193	144	109	81	60	46
24	40S	.375	438	422	392	372	365	357	352	348	343	339	337	335	317	271	214	162	120	90	68	50	37	28
	80S	.500	583	563	522	496	487	475	470	464	458	452	449	446	423	362	286	216	160	120	90	67	50	38

The Allowable Stress Values used are as shown in Appendix "A" of ANSI B31.3-1993 for welded pipe to ASTM A-312 having a weld joint factor of .80.
The Stress Values at all temperatures above 1000F apply only when the carbon is 0.04% or higher.

90° LONG RADIUS ELBOWS





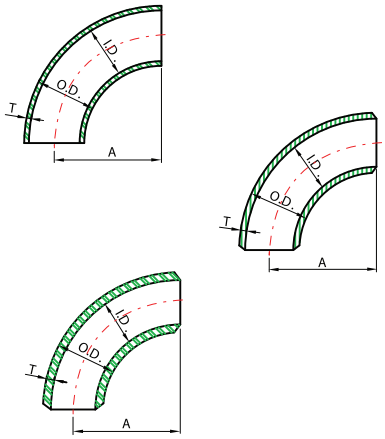
DIMENSIONS

unit : inch

Nominal pipe size	Outside diameter (O.D.)	Center to face (A)	Schedule 5S			Schedule 10S			Schedule 40S		
			Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *
1/2	.840	1-1/2	.710	.065	.12	.674	.083	.14	.622	.109	.18
3/4	1.050	1-1/2	.920	.065	.13	.884	.083	.15	.824	.113	.19
1	1.315	1-1/2	1.185	.065	.19	1.097	.109	.30	1.049	.133	.35
1-1/4	1.660	1-7/8	1.530	.065	.31	1.442	.109	.50	1.380	.140	.56
1-1/2	1.900	2-1/4	1.770	.065	.38	1.682	.109	.69	1.610	.145	.88
2	2.375	3	2.245	.065	.64	2.157	.109	1.13	2.067	.154	1.56
2-1/2	2.875	3-3/4	2.709	.083	1.50	2.635	.120	1.88	2.469	.203	3.00
3	3.500	4-1/2	3.334	.083	2.00	3.260	.120	2.69	3.068	.216	4.81
3-1/2	4.000	5-1/4	3.834	.083	2.62	3.760	.120	3.75	3.548	.226	6.25
4	4.500	6	4.334	.083	3.31	4.260	.120	4.75	4.026	.237	9.19
5	5.563	7-1/2	5.345	.109	6.50	5.295	.134	8.00	5.047	.258	15.13
6	6.625	9	6.407	.109	10.00	6.357	.134	12.00	6.065	.280	24.00
8	8.625	12	8.407	.109	17.30	8.329	.148	23.50	7.981	.322	47.50
10	10.750	15	10.482	.134	32.00	10.420	.165	43.00	10.020	.365	85.00
12	12.750	18	12.438	.156	51.00	12.390	.180	60.00	12.000	.375	131.00
14	14.000	21	13.688	.156	68.00	13.624	.188	80.00	13.250	.375	155.00
16	16.000	24	15.670	.165	100.00	15.624	.188	105.00	15.250	.375	202.00
18	18.000	27	17.670	.165	125.00	17.624	.188	132.00	17.250	.375	269.00
20	20.000	30	19.624	.188	165.00	19.564	.218	220.00	19.250	.375	330.00
24	24.000	36	23.564	.218	280.00	23.500	.250	310.00	23.250	.375	464.00

90° LONG RADIUS ELBOWS





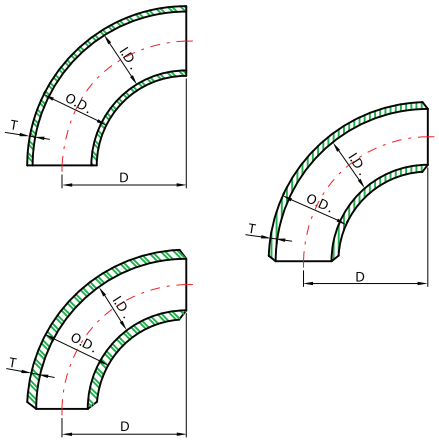
DIMENSIONS

unit : inch / lb

Nominal pipe size	Outside diameter (O.D.)	Center to face (A)	Schedule 80S			Schedule 160			XX Strong Wall		
			Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *
1/2	.840	1-1/2	.546	.147	.23	.464	.188	.29	.252	.294	.46
3/4	1.050	1-1/2	.742	.154	.25	.612	.219	.35	.434	.308	.50
1	1.315	1-1/2	.957	.179	.48	.815	.250	.67	.599	.358	.96
1-1/4	1.660	1-7/8	1.278	.191	.88	1.160	.250	1.15	.896	.382	1.76
1-1/2	1.900	2-1/4	1.500	.200	1.13	1.338	.281	1.59	1.100	.400	2.26
2	2.375	3	1.939	.218	2.00	1.689	.343	3.14	1.503	.436	4.00
2-1/2	2.875	3-3/4	2.323	.276	4.00	2.125	.375	5.44	1.771	.552	8.00
3	3.500	4-1/2	2.900	.300	6.56	2.624	.438	9.58	2.300	.600	13.12
3-1/2	4.000	5-1/4	3.364	.318	8.80	------	------	------	2.728	.636	17.60
4	4.500	6	3.826	.337	13.63	3.438	.531	21.53	3.152	.674	27.26
5	5.563	7-1/2	4.813	.375	21.13	4.313	.625	35.29	4.063	.750	42.26
6	6.625	9	5.761	.432	36.00	5.187	.719	59.76	4.897	.864	72.00
8	8.625	12	7.625	.500	73.00	6.813	.906	132.00	6.875	.875	127.00
10	10.750	15	9.750	.500	114.00	8.500	1.125	256.00	------	------	------
12	12.750	18	11.750	.500	175.00	10.126	1.312	458.00	------	------	------
14	14.000	21	13.000	.500	206.00	11.188	1.406	-------	------	------	------
16	16.000	24	15.000	.500	269.00	12.812	1.594	------	------	------	------
18	18.000	27	17.000	.500	350.00	14.438	1.781	------	------	------	------
20	20.000	30	19.000	.500	439.00	16.062	1.969	------	------	------	------
24	24.000	36	23.000	.500	617.00	19.312	2.344	------	------	------	------

90° SHORT RADIUS ELBOWS





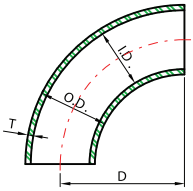
DIMENSIONS

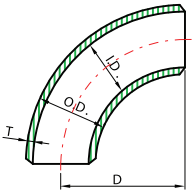
unit : inch / lb

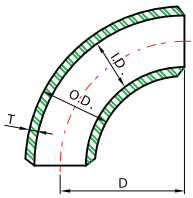
Nominal pipe size	Outside diameter (O.D.)	Center to face (D)	Schedule 5S			Schedule 10S			Schedule 40S		
			Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *
1	1.315	1	1.185	.065	.17	1.097	.109	.23	1.049	.133	.26
1–1/4	1.660	1–1/4	1.530	.065	.31	1.442	.109	.38	1.380	.140	.45
1–1/2	1.900	1–1/2	1.770	.065	.43	1.682	.109	.49	1.610	.145	.63
2	2.375	2	2.245	.065	.63	2.157	.109	.81	2.067	.154	1.13
2–1/2	2.875	2–1/2	2.709	.083	1.25	2.635	.120	1.36	2.469	.203	2.25
3	3.500	3	3.334	.083	1.75	3.260	.120	2.17	3.068	.216	3.31
3–1/2	4.000	3–1/2	3.834	.083	2.35	3.760	.120	3.05	3.548	.226	4.54
4	4.500	4	4.334	.083	3.12	4.260	.120	3.79	4.026	.237	6.88
5	5.563	5	5.345	.109	4.94	5.295	.134	6.12	5.047	.258	11.63
6	6.625	6	6.407	.109	7.75	6.357	.134	9.15	6.065	.280	17.50
8	8.625	8	8.407	.109	15.44	8.329	.148	17.63	7.981	.322	37.60
10	10.750	10	10.482	.134	27.40	10.420	.165	35.00	10.020	.365	63.00
12	12.750	12	12.438	.156	35.00	12.390	.180	40.00	12.000	.375	80.00
14	14.000	14	13.688	.156	44.00	13.624	.188	52.00	13.250	.375	101.00
16	16.000	16	15.670	.165	65.00	15.624	.188	68.00	15.250	.375	131.00
18	18.000	18	17.670	.165	81.00	17.624	.188	86.00	17.250	.375	175.00
20	20.000	20	19.624	.188	107.00	19.564	.218	143.00	19.250	.375	215.00
24	24.000	24	23.564	.218	182.00	23.500	.250	202.00	23.250	.375	302.00

90° SHORT RADIUS ELBOWS









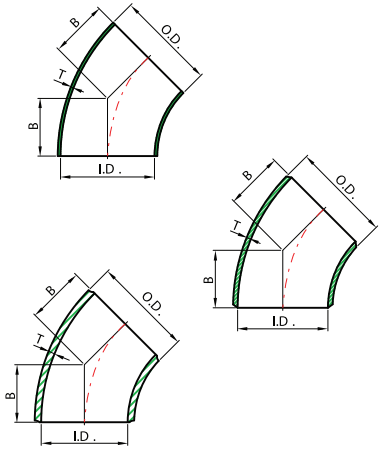
DIMENSIONS

unit : inch / lb

Nominal pipe size	Outside diameter (O.D.)	Center to face (D)	Schedule 80S			Schedule 160			XX Strong Wall		
			Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *
1	1.315	1	.957	.179	.38	.815	.250	.53	.599	.358	.76
1–1/4	1.660	1–1/4	1.278	.191	.63	1.160	.250	.82	.896	.382	1.26
1–1/2	1.900	1–1/2	1.500	.200	.88	1.338	.281	1.23	1.100	.400	1.76
2	2.375	2	1.939	.218	1.55	1.689	.343	2.43	1.503	.436	3.10
2–1/2	2.875	2–1/2	2.323	.276	2.88	2.125	.375	3.88	1.771	.552	5.76
3	3.500	3	2.900	.300	4.20	2.624	.438	6.09	2.300	.600	8.40
3–1/2	4.000	3–1/2	3.364	.318	5.35	-----	-----	-----	2.728	.636	10.70
4	4.500	4	3.826	.337	9.06	3.438	.531	14.22	3.152	.674	18.12
5	5.563	5	4.813	.375	16.10	4.313	.625	26.72	4.063	.750	32.20
6	6.625	6	5.761	.432	26.00	5.187	.719	43.16	4.897	.864	52.00
8	8.625	8	7.625	.500	54.80	6.813	.906	99.18	6.875	.875	109.00
10	10.750	10	9.750	.500	99.80	8.500	1.125	224.00	------	------	------
12	12.750	12	11.750	.500	125.00	10.126	1.312	327.00	------	------	------
14	14.000	14	13.000	.500	135.00	11.188	1.406	------	------	------	------
16	16.000	16	15.000	.500	175.00	12.812	1.594	------	------	------	------
18	18.000	18	17.000	.500	228.00	14.438	1.781	------	------	------	------
20	20.000	20	19.000	.500	285.00	16.062	1.969	------	------	------	------
24	24.000	24	23.000	.500	401.00	19.312	2.344	------	------	------	------

45° LONG RADIUS ELBOWS





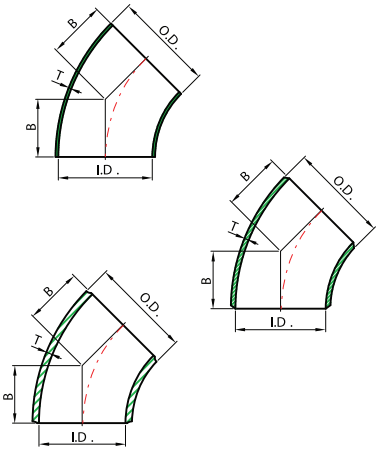
DIMENSIONS

unit : inch / lb

Nominal pipe size	Outside diameter (O.D.)	Center to face (B)	Schedule 5S			Schedule 10S			Schedule 40S		
			Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *
1/2	.840	5/8	.710	.065	.06	.674	.083	.07	.622	.109	.09
3/4	1.050	7/16	.920	.065	.06	.884	.083	.07	.824	.113	.09
1	1.315	7/8	1.185	.065	.12	1.097	.109	.19	1.049	.133	.25
1-1/4	1.660	1	1.530	.065	.19	1.442	.109	.25	1.380	.140	.38
1-1/2	1.900	1-1/8	1.770	.065	.25	1.682	.109	.38	1.610	.145	.50
2	2.375	1-3/8	2.245	.065	.31	2.157	.109	.56	2.067	.154	.88
2-1/2	2.875	1-3/4	2.709	.083	.75	2.635	.120	1.06	2.469	.203	1.69
3	3.500	2	3.334	.083	1.06	3.260	.120	1.38	3.068	.216	2.38
3-1/2	4.000	2-1/4	3.834	.083	1.16	3.760	.120	1.66	3.548	.226	3.13
4	4.500	2-1/2	4.334	.083	1.66	4.260	.120	2.38	4.026	.237	4.60
5	5.563	3-1/8	5.345	.109	3.25	5.295	.134	4.00	5.047	.258	7.57
6	6.625	3-3/4	6.407	.109	5.00	6.357	.134	6.00	6.065	.280	12.00
8	8.625	5	8.407	.109	8.65	8.329	.148	11.75	7.981	.322	23.75
10	10.750	6-1/4	10.482	.134	16.00	10.420	.165	21.50	10.020	.365	42.50
12	12.750	7-1/2	12.438	.156	25.50	12.390	.180	30.00	12.000	.375	65.50
14	14.000	8-3/4	13.688	.156	34.00	13.624	.188	40.00	13.250	.375	77.50
16	16.000	10	15.670	.165	50.00	15.624	.188	52.50	15.250	.375	101.00
18	18.000	11-1/4	17.670	.165	62.50	17.624	.188	66.00	17.250	.375	131.00
20	20.000	12-1/2	19.624	.188	82.50	19.564	.218	110.00	19.250	.375	165.00
24	24.000	15	23.564	.218	140.00	23.500	.250	155.00	23.250	.375	232.00

45° LONG RADIUS ELBOWS





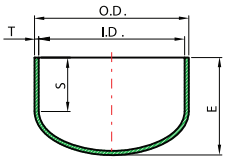
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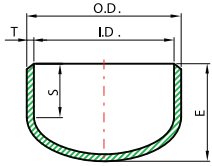
unit : inch / lb

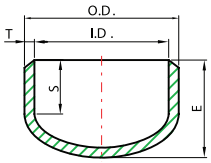
Nominal pipe size	Outside diameter (O.D.)	Center to face (B)	Schedule 80S			Schedule 160			XX Strong Wall		
			Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *
1/2	.840	5/8	.546	.147	.12	.464	.188	.16	.252	.294	.24
3/4	1.050	7/16	.742	.154	.12	.612	.219	.16	.434	.308	.24
1	1.315	7/8	.957	.179	.31	.815	.250	.43	.599	.358	.62
1-1/4	1.660	1	1.278	.191	.50	1.160	.250	.85	.896	.382	1.00
1-1/2	1.900	1-1/8	1.500	.200	.63	1.338	.281	.88	1.100	.400	1.26
2	2.375	1-3/8	1.939	.218	1.13	1.689	.343	1.77	1.503	.436	2.26
2-1/2	2.875	1-3/4	2.323	.276	2.19	2.125	.375	2.95	1.771	.552	4.38
3	3.500	2	2.900	.300	3.31	2.624	.438	4.80	2.300	.600	6.62
3-1/2	4.000	2-1/4	3.364	.318	4.40	------	------	------	2.728	.636	8.80
4	4.500	2-1/2	3.826	.337	6.82	3.438	.531	10.87	3.152	.674	13.64
5	5.563	3-1/8	4.813	.375	10.56	4.313	.625	17.52	4.063	.750	21.12
6	6.625	3-3/4	5.761	.432	18.00	5.187	.719	20.88	4.897	.864	36.00
8	8.625	5	7.625	.500	36.50	6.813	.906	64.24	6.875	.875	63.87
10	10.750	6-1/4	9.750	.500	57.00	8.500	1.125	127.00	------	------	------
12	12.750	7-1/2	11.750	.500	87.50	10.126	1.312	229.00	------	------	------
14	14.000	8-3/4	13.000	.500	103.00	11.188	1.406	------	------	------	------
16	16.000	10	15.000	.500	134.00	12.812	1.594	------	------	------	------
18	18.000	11-1/4	17.000	.500	175.00	14.438	1.781	------	------	------	------
20	20.000	12-1/2	19.000	.500	219.00	16.062	1.969	------	------	------	------
24	24.000	15	23.000	.500	308.00	19.312	2.344	------	------	------	------

CAPS









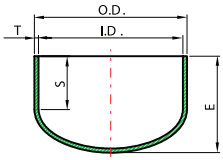
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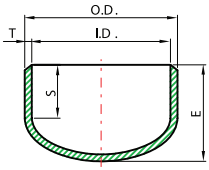
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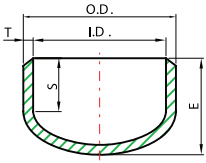
Nominal pipe size	Outside diameter (O.D.)	Length (E)	Tangent Length (S)	Schedule 5S			Schedule 10S			Schedule 40S		
				Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *
1/2	.840	1	.74	.710	.065	.08	.674	.083	.09	.622	.109	.10
3/4	1.050	1	.68	.920	.065	.11	.884	.083	.12	.824	.113	.13
1	1.315	1-1/2	1.10	1.185	.065	.18	1.097	.109	.19	1.049	.133	.28
1-1/4	1.660	1-1/2	1.02	1.530	.065	.20	1.442	.109	.28	1.380	.140	.38
1-1/2	1.900	1-1/2	.95	1.770	.065	.22	1.682	.109	.31	1.610	.145	.50
2	2.375	1-1/2	.83	2.245	.065	.36	2.157	.109	.38	2.067	.154	.60
2-1/2	2.875	1-1/2	.68	2.709	.083	.50	2.635	.120	.56	2.469	.203	1.00
3	3.500	2	1.02	3.334	.083	.86	3.260	.120	.88	3.068	.216	1.56
3-1/2	4.000	2-1/2	1.40	3.834	.083	1.20	3.760	.120	1.25	3.548	.226	2.25
4	4.500	2-1/2	1.26	4.334	.083	1.25	4.260	.120	1.44	4.026	.237	2.69
5	5.563	3	1.48	5.345	.109	2.00	5.295	.134	2.25	5.047	.258	4.06
6	6.625	3-1/2	1.70	6.407	.109	2.75	6.357	.134	3.00	6.065	.280	7.12
8	8.625	4	1.68	8.407	.109	4.50	8.329	.148	5.50	7.981	.322	12.50
10	10.750	5	2.13	10.482	.134	9.50	10.420	.165	10.80	10.020	.365	20.30
12	12.750	6	2.63	12.438	.156	14.00	12.390	.180	14.40	12.000	.375	28.80
14	14.000	6-1/2	2.81	13.688	.156	17.00	13.624	.188	18.00	13.250	.375	35.70
16	16.000	7	2.81	15.670	.165	30.00	15.624	.188	32.00	15.250	.375	48.50
18	18.000	8	3.31	17.670	.165	38.00	17.624	.188	39.60	17.250	.375	59.40
20	20.000	9	3.81	19.624	.188	55.00	19.564	.218	60.00	19.250	.375	75.00
24	24.000	10-1/2	4.31	23.564	.218	75.00	23.500	.250	76.00	23.250	.375	98.00

CAPS









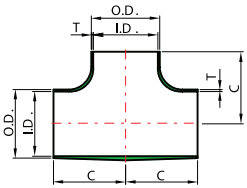
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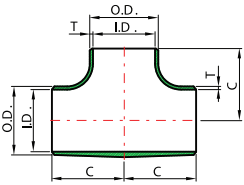
unit : inch / lb

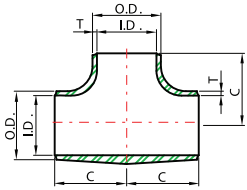
Nominal pipe size	Outside diameter (O.D.)	Length (E) Tangent Length (S)	Length (E1) Tangent Length (S)	Schedule 80S			Schedule 160			XX Strong Wall		
				Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *
1/2	.840	E 1 S .72	E1 1 S .64	.546	.147	.11	.464	.188	.14	.252	.294	.22
3/4	1.050	E 1 S .66	E1 1 S .58	.742	.154	.14	.612	.219	.20	.434	.308	.28
1	1.315	E 1-1/2 S 1.08	E1 1-1/2 S .99	.957	.179	.29	.815	.250	.40	.599	.358	.58
1–1/4	1.660	E 1-1/2 S .99	E1 1-1/2 S .89	1.278	.191	.39	1.160	.250	.50	.896	.382	.78
1–1/2	1.900	E 1-1/2 S .93	E1 1-1/2 S .83	1.500	.200	.54	1.338	.281	.75	1.100	.400	1.08
2	2.375	E 1-1/2 S .80	E1 1-3/4 S .95	1.939	.218	.75	1.689	.343	1.17	1.503	.436	1.50
2–1/2	2.875	E 1-1/2 S .64	E1 2 S 1.01	2.323	.276	1.12	2.125	.375	1.48	1.771	.552	2.24
3	3.500	E 2 S .98	E1 2-1/2 S 1.32	2.900	.300	1.87	2.624	.438	2.71	2.300	.600	3.74
3–1/2	4.000	E 2-1/2 S 1.34	E1 3 S 1.70	3.364	.318	2.50	------	-----	-----	2.728	.636	5.00
4	4.500	E 2-1/2 S 1.21	E1 3 S 1.60	3.826	.337	3.54	3.438	.531	5.55	3.152	.674	7.08
5	5.563	E 3 S 1.42	E1 3-1/2 S 1.73	4.813	.375	5.63	4.313	.625	9.34	4.063	.750	11.26
6	6.625	E 3-1/2 S 1.63	E1 4 S 1.91	5.761	.432	10.00	5.187	.719	16.00	4.897	.864	20.00
8	8.625	E 4 S 1.59	E1 5 S 2.41	7.625	.500	16.38	6.813	.906	29.64	6.875	.875	22.76
10	10.750	E 5 S 2.06	E1 6 S 2.75	9.750	.500	27.30	8.500	1.125	61.42	-------	--------	-------
12	12.750	E 6 S 2.56	E1 7 S 3.16	11.750	.500	36.60	10.126	1.312	95.00	-------	--------	-------
14	14.000	E 6-1/2 S 2.75	-------	13.000	.500	48.00	11.188	1.406	-------	-------	--------	-------
16	16.000	E 7 S 2.75	-------	15.000	.500	65.00	12.812	1.594	-------	-------	--------	-------
18	18.000	E 8 S 3.25	-------	17.000	.500	79.20	14.438	1.781	-------	-------	--------	-------
20	20.000	E 9 S 3.75	-------	19.000	.500	88.00	16.062	1.969	-------	-------	--------	-------
24	24.000	E 10-1/2 S 4.25	-------	23.000	.500	135.00	19.312	2.344	-------	-------	--------	-------

STRAIGHT TEES









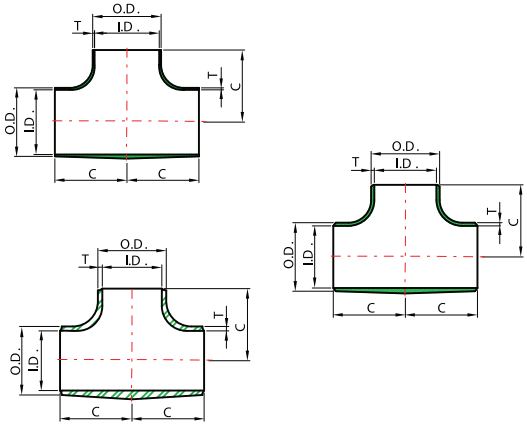
DIMENSIONS

unit : inch / lb

Nominal pipe size	Outside diameter (O.D.)	Center to end (C)	Schedule 5S			Schedule 10S			Schedule 40S		
			Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight * *
1/2	.840	1	.710	.065	.19	.674	.083	.21	.622	.109	.23
3/4	1.050	1-1/8	.920	.065	.22	.884	.083	.28	.824	.113	.38
1	1.315	1-1/2	1.185	.065	.40	1.097	.109	.63	1.049	.133	.65
1-1/4	1.660	1-7/8	1.530	.065	.75	1.442	.109	1.10	1.380	.140	1.31
1-1/2	1.900	2-1/4	1.770	.065	.95	1.682	.109	1.50	1.610	.145	1.90
2	2.375	2-1/2	2.245	.065	1.20	2.157	.109	1.87	2.067	.154	2.83
2-1/2	2.875	3	2.709	.083	2.15	2.635	.120	3.10	2.469	.203	4.85
3	3.500	3-3/8	3.334	.083	3.40	3.260	.120	3.90	3.068	.216	7.30
3-1/2	4.000	3-3/4	3.834	.083	5.50	3.760	.120	5.88	3.548	.226	9.00
4	4.500	4-1/8	4.334	.083	7.20	4.260	.120	7.63	4.026	.237	11.63
5	5.563	4-7/8	5.345	.109	13.00	5.295	.134	13.45	5.047	.258	20.75
6	6.625	5-5/8	6.407	.109	17.20	6.357	.134	17.80	6.065	.280	24.25
8	8.625	7	8.407	.109	31.00	8.329	.148	34.50	7.981	.322	46.10
10	10.750	8-1/2	10.482	.134	55.00	10.420	.165	59.00	10.020	.365	78.00
12	12.750	10	12.438	.156	83.00	12.390	.180	87.00	12.000	.375	137.00
14	14.000	11	13.688	.156	89.00	13.624	.188	107.00	13.250	.375	175.00
16	16.000	12	15.670	.165	115.00	15.624	.188	130.00	15.250	.375	220.00
18	18.000	13-1/2	17.670	.165	149.00	17.624	.188	169.00	17.250	.375	286.00
20	20.000	15	19.624	.188	171.00	19.564	.218	228.00	19.250	.375	358.00
24	24.000	17	23.564	.218	298.00	23.500	.250	343.00	23.250	.375	498.00

STRAIGHT TEES





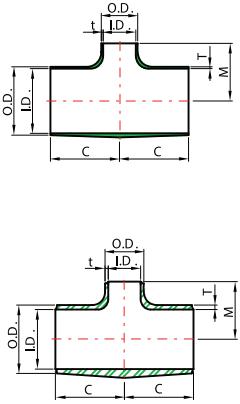
DIMENSIONS

unit : inch / lb

Nominal pipe size	Outside diameter (O.D.)	Center to end (C)	Schedule 80S			Schedule 160S			XX Strong Wall		
			Inside diameter (I.D.)	Wall thickness (T)	Approx. weight **	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight **	Inside diameter (I.D.)	Wall thickness (T)	Approx. weight **
1/2	.840	1	.546	.147	.30	.464	.188	.38	.252	.294	.60
3/4	1.050	1-1/8	.742	.154	.45	.612	.219	.64	.434	.308	.90
1	1.315	1-1/2	.957	.179	.85	.815	.250	1.19	.599	.358	1.70
1-1/4	1.660	1-7/8	1.278	.191	1.50	1.160	.250	1.97	.896	.382	3.00
1-1/2	1.900	2-1/4	1.500	.200	2.25	1.338	.281	3.15	1.100	.400	4.50
2	2.375	2-1/2	1.939	.218	3.50	1.689	.343	5.50	1.503	.436	7.00
2-1/2	2.875	3	2.323	.276	6.90	2.125	.375	9.38	1.771	.552	13.80
3	3.500	3-3/8	2.900	.300	9.80	2.624	.438	14.31	2.300	.600	19.60
3-1/2	4.000	3-3/4	3.364	.318	12.00	-----	-----	-----	2.728	.636	24.00
4	4.500	4-1/8	3.826	.337	17.00	3.438	.531	26.86	3.152	.674	34.00
5	5.563	4-7/8	4.813	.375	25.00	4.313	.625	41.75	4.063	.750	50.00
6	6.625	5-5/8	5.761	.432	30.00	5.187	.719	49.80	4.897	.864	60.00
8	8.625	7	7.625	.500	62.00	6.813	.906	112.00	6.875	.875	108.00
10	10.750	8-1/2	9.750	.500	110.00	8.500	1.125	247.00	-----	-----	-----
12	12.750	10	11.750	.500	185.00	10.126	1.312	484.00	-----	-----	-----
14	14.000	11	13.000	.500	210.00	11.188	1.406	590.00	-----	-----	-----
16	16.000	12	15.000	.500	265.00	12.812	1.594	812.00	-----	-----	-----
18	18.000	13-1/2	17.000	.500	344.00	14.438	1.781	1097.00	-----	-----	-----
20	20.000	15	19.000	.500	430.00	16.062	1.969	1690.00	-----	-----	-----
24	24.000	17	23.000	.500	600.00	19.312	2.344	2950.00	-----	-----	-----

REDUCING OUTLET TEES





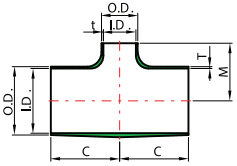
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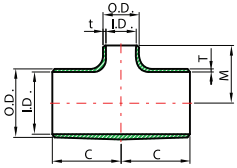
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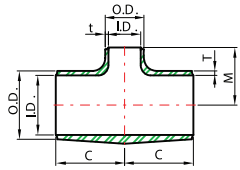
Nominal Pipe Size Run X Outlet	Outside Diameter Run (O.D.)	Outside Diameter Outlet (O.D)	Center to End Run (C)	Center to End Outlet (M)	Schedule 5S					Schedule 10S					Schedule 40S				
					Inside Diameter Run (I.D.)	Inside Diameter Outlet (I.D.)	Wall Thickness Run (T)	Wall Thickness Outlet (t)	Approx. Weight **	Inside Diameter Run (I.D.)	Inside Diameter Outlet (I.D.)	Wall Thickness Run (T)	Wall Thickness Outlet (t)	Approx. Weight **	Inside Diameter Run (I.D.)	Inside Diameter Outlet (I.D.)	Wall Thickness Run (T)	Wall Thickness Outlet (t)	Approx. Weight **
1/2 x1/4	.840	.540	1	1	.710	.410	.065	.065	.16	.674	.410	.083	.065	.18	.622	.364	.109	.088	.20
1/2 x3/8	.840	.675	1	1	.710	.545	.065	.065	.17	.674	.545	.083	.065	.19	.622	.493	.109	.091	.21
3/4 x3/8	1.050	.675	1-1/8	1-1/8	.920	.545	.065	.065	.19	.884	.545	.083	.065	.24	.824	.493	.113	.091	.32
3/4 x1/2	1.050	.840	1-1/8	1-1/8	.920	.710	.065	.065	.20	.884	.674	.083	.083	.25	.824	.622	.113	.109	.34
1 x3/8	1.315	.675	1-1/2	1-1/2	1.185	.545	.065	.065	.34	1.097	.545	.109	.065	.54	1.049	.493	.133	.091	.56
1 x1/2	1.315	.840	1-1/2	1-1/2	1.185	.710	.065	.065	.35	1.097	.674	.109	.083	.55	1.049	.622	.133	.109	.57
1 x3/4	1.315	1.050	1-1/2	1-1/2	1.185	.920	.065	.065	.36	1.097	.884	.109	.083	.56	1.049	.824	.133	.113	.59
1-1/4x 1/2	1.660	.840	1-7/8	1-7/8	1.530	.710	.065	.065	.64	1.442	.674	.109	.083	.95	1.380	.622	.140	.109	1.12
1-1/4x 3/4	1.660	1.050	1-7/8	1-7/8	1.530	.920	.065	.065	.66	1.442	.884	.109	.083	.97	1.380	.824	.140	.113	1.15
1-1/4x 1	1.660	1.315	1-7/8	1-7/8	1.530	1.185	.065	.065	.68	1.442	1.097	.109	.109	.99	1.380	1.049	.140	.133	1.17
1-1/2x 1/2	1.900	.840	2-1/4	2-1/4	1.770	.710	.065	.065	.81	1.682	.674	.109	.083	1.27	1.610	.622	.145	.109	1.61
1-1/2x 3/4	1.900	1.050	2-1/4	2-1/4	1.770	.920	.065	.065	.82	1.682	.884	.109	.083	1.29	1.610	.824	.145	.113	1.63
1-1/2x 1	1.900	1.315	2-1/4	2-1/4	1.770	1.185	.065	.065	.83	1.682	1.097	.109	.109	1.32	1.610	1.049	.145	.133	1.67
1-1/2x 1-1/4	1.900	1.660	2-1/4	2-1/4	1.770	1.530	.065	.065	.85	1.682	1.442	.109	.109	1.35	1.610	1.380	.145	.140	1.71
2 x3/4	2.375	1.050	2-1/2	1-3/4	2.245	.920	.065	.065	1.02	2.157	.884	.109	.083	1.59	2.067	.824	.154	.113	2.40
2 x1	2.375	1.315	2-1/2	2	2.245	1.185	.065	.065	1.03	2.157	1.097	.109	.109	1.60	2.067	1.049	.154	.133	2.43
2 x1-1/4	2.375	1.660	2-1/2	2-1/4	2.245	1.530	.065	.065	1.05	2.157	1.442	.109	.109	1.64	2.067	1.380	.154	.140	2.49
2 x1-1/2	2.375	1.900	2-1/2	2-3/8	2.245	1.770	.065	.065	1.08	2.157	1.682	.109	.109	1.68	2.067	1.610	.154	.145	2.54
2-1/2x 1	2.875	1.315	3	2-1/4	2.709	1.185	.083	.065	1.83	2.635	1.097	.120	.109	2.63	2.469	1.049	.203	.133	4.12
2-1/2x 1-1/4	2.875	1.660	3	2-1/2	2.709	1.530	.083	.065	1.85	2.635	1.442	.120	.109	2.66	2.469	1.380	.203	.140	4.17
2-1/2x 1-1/2	2.875	1.900	3	2-5/8	2.709	1.770	.083	.065	1.89	2.635	1.682	.120	.109	2.73	2.469	1.610	.203	.145	4.27
2-1/2x 2	2.875	2.375	3	2-3/4	2.709	2.245	.083	.065	1.93	2.635	2.157	.120	.109	2.79	2.469	2.067	.203	.154	4.36
3 x1	3.500	1.315	3-3/8	2-5/8	3.334	1.185	.083	.065	2.85	3.260	1.097	.120	.109	3.27	3.068	1.049	.216	.133	6.13
3 x1-1/4	3.500	1.660	3-3/8	2-3/4	3.334	1.530	.083	.065	2.89	3.260	1.442	.120	.109	3.31	3.068	1.380	.216	.140	6.20
3 x1-1/2	3.500	1.900	3-3/8	2-7/8	3.334	1.770	.083	.065	2.93	3.260	1.682	.120	.109	3.35	3.068	1.610	.216	.145	6.28
3 x2	3.500	2.375	3-3/8	3	3.334	2.245	.083	.065	2.99	3.260	2.157	.120	.109	3.43	3.068	2.067	.216	.154	6.42
3 x2-1/2	3.500	2.875	3-3/8	3-1/4	3.334	2.709	.083	.083	3.06	3.260	2.635	.120	.120	3.51	3.068	2.469	.216	.203	6.57
3-1/2x 1-1/2	4.000	1.900	3-3/4	3-1/8	3.834	1.770	.083	.065	4.67	3.760	1.682	.120	.109	4.99	3.548	1.610	.226	.145	7.65
3-1/2x 2	4.000	2.375	3-3/4	3-1/4	3.834	2.245	.083	.065	4.73	3.760	2.157	.120	.109	5.05	3.548	2.067	.226	.154	7.74
3-1/2x 2-1/2	4.000	2.875	3-3/4	3-1/2	3.834	2.709	.083	.083	4.84	3.760	2.635	.120	.120	5.17	3.548	2.469	.226	.203	8.97
3-1/2x 3	4.000	3.500	3-3/4	3-5/8	3.834	3.334	.083	.083	4.95	3.760	3.260	.120	.120	5.29	3.548	3.068	.226	.216	9.10
4 x1-1/2	4.500	1.900	4-1/8	3-3/8	4.334	1.770	.083	.065	6.05	4.260	1.682	.120	.109	6.40	4.026	1.610	.237	.145	9.76
4 x2	4.500	2.375	4-1/8	3-1/2	4.334	2.245	.083	.065	6.12	4.260	2.157	.120	.109	6.48	4.026	2.067	.237	.154	9.88
4 x2-1/2	4.500	2.875	4-1/8	3-3/4	4.334	2.709	.083	.083	6.19	4.260	2.635	.120	.120	6.56	4.026	2.469	.237	.203	10.00
4 x3	4.500	3.500	4-1/8	3-7/8	4.334	3.334	.083	.083	6.33	4.260	3.260	.120	.120	6.71	4.026	3.068	.237	.216	10.23
4 x3-1/2	4.500	4.000	4-1/8	4	4.334	3.834	.083	.083	6.48	4.260	3.760	.120	.120	6.86	4.026	3.548	.237	.226	10.40

REDUCING OUTLET TEES









DIMENSIONS

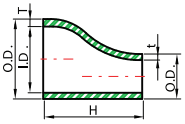
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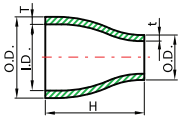
Nominal Pipe Size Run X Outlet	Outside Diameter Run (O.D.)	Outside Diameter Outlet (O.D)	Center to End Run (C)	Center to End Outlet (M)	Schedule 80S					Schedule 160					XX Strong Wall				
					Inside Diameter Run (I.D.)	Inside Diameter Outlet (I.D.)	Wall Thickness Run (T)	Wall Thickness Outlet (t)	Approximate Weight **	Inside Diameter Run (I.D.)	Inside Diameter Outlet (I.D.)	Wall Thickness Run (T)	Wall Thickness Outlet (t)	Approximate Weight **	Inside Diameter Run (I.D.)	Inside Diameter Outlet (I.D.)	Wall Thickness Run (T)	Wall Thickness Outlet (t)	Approximate Weight **
1/2 x 1/4	.840	.540	1	1	.546	.302	.147	.119	.25	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------
1/2 x 3/8	.840	.675	1	1	.546	.423	.147	.126	.27	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------
3/4 x 3/8	1.050	.675	1-1/8	1-1/8	.742	.423	.154	.126	.38	.612	.301	.219	.187	.55	---------	---------	---------	---------	---------
3/4 x 1/2	1.050	.840	1-1/8	1-1/8	.742	.546	.154	.147	.40	.612	.466	.219	.187	.57	.434	.252	.308	.294	.81
1 x 3/8	1.315	.675	1-1/2	1-1/2	.957	.423	.179	.126	.73	.815	.301	.250	.187	1.02	---------	---------	---------	---------	---------
1 x 1/2	1.315	.840	1-1/2	1-1/2	.957	.546	.179	.147	.75	.815	.466	.250	.187	1.04	.599	.252	.358	.294	1.49
1 x 3/4	1.315	1.050	1-1/2	1-1/2	.957	.742	.179	.154	.76	.815	.614	.250	.218	1.07	.599	.434	.358	.308	1.53
1-1/4 x 1/2	1.660	.840	1-7/8	1-7/8	1.278	.546	.191	.147	1.29	1.160	.466	.250	.187	1.69	.896	.252	.382	.294	2.58
1-1/4 x 3/4	1.660	1.050	1-7/8	1-7/8	1.278	.742	.191	.154	1.32	1.160	.614	.250	.218	1.73	.896	.434	.382	.308	2.64
1-1/4 x 1	1.660	1.315	1-7/8	1-7/8	1.278	.957	.191	.179	1.35	1.160	.815	.250	.250	1.77	.896	.599	.382	.358	2.70
1-1/2 x 1/2	1.900	.840	2-1/4	2-1/4	1.500	.546	.200	.147	1.91	1.338	.466	.281	.187	2.67	1.100	.252	.400	.294	3.82
1-1/2 x 3/4	1.900	1.050	2-1/4	2-1/4	1.500	.742	.200	.154	1.93	1.338	.614	.281	.218	2.71	1.100	.434	.400	.308	3.87
1-1/2 x 1	1.900	1.315	2-1/4	2-1/4	1.500	.957	.200	.179	1.98	1.338	.815	.281	.250	2.77	1.100	.599	.400	.358	3.96
1-1/2 x 1-1/4	1.900	1.660	2-1/4	2-1/4	1.500	1.278	.200	.191	2.02	1.338	1.160	.281	.250	2.83	1.100	.896	.400	.382	4.05
2 x 3/4	2.375	1.050	2-1/2	1-3/4	1.939	.742	.218	.154	2.97	1.689	.614	.343	.218	4.67	1.503	.434	.436	.308	5.95
2 x 1	2.375	1.315	2-1/2	2	1.939	.957	.218	.179	3.01	1.689	.815	.343	.250	4.73	1.503	.599	.436	.358	6.02
2 x 1-1/4	2.375	1.660	2-1/2	2-1/4	1.939	1.278	.218	.191	3.08	1.689	1.160	.343	.250	4.84	1.503	.896	.436	.382	6.16
2 x 1-1/2	2.375	1.900	2-1/2	2-3/8	1.939	1.500	.218	.200	3.15	1.689	1.338	.343	.281	4.95	1.503	1.100	.436	.400	6.30
2-1/2 x 1	2.875	1.315	3	2-1/4	2.323	.957	.276	.179	5.86	2.125	.815	.375	.250	7.97	1.771	.599	.552	.358	11.73
2-1/2 x 1-1/4	2.875	1.660	3	2-1/2	2.323	1.278	.276	.191	5.93	2.125	1.160	.375	.250	8.06	1.771	.896	.552	.382	11.87
2-1/2 x 1-1/2	2.875	1.900	3	2-5/8	2.323	1.500	.276	.200	6.07	2.125	1.338	.375	.281	8.25	1.771	1.100	.552	.400	12.14
2-1/2 x 2	2.875	2.375	3	2-3/4	2.323	1.939	.276	.218	6.21	2.125	1.689	.375	.343	8.44	1.771	1.503	.552	.436	12.42
3 x 1	3.500	1.315	3-3/8	2-5/8	2.900	.957	.300	.179	8.23	2.624	.815	.438	.250	12.02	2.300	.599	.600	.358	16.46
3 x 1-1/4	3.500	1.660	3-3/8	2-3/4	2.900	1.278	.300	.191	8.33	2.624	1.160	.438	.250	12.16	2.300	.896	.600	.382	16.66
3 x 1-1/2	3.500	1.900	3-3/8	2-7/8	2.900	1.500	.300	.200	8.43	2.624	1.338	.438	.281	12.30	2.300	1.100	.600	.400	16.85
3 x 2	3.500	2.375	3-3/8	3	2.900	1.939	.300	.218	8.62	2.624	1.689	.438	.343	12.59	2.300	1.503	.600	.436	17.24
3 x 2-1/2	3.500	2.875	3-3/8	3-1/4	2.900	2.323	.300	.276	8.82	2.624	2.125	.438	.375	12.88	2.300	1.771	.600	.552	17.64
3-1/2 x 1-1/2	4.000	1.900	3-3/4	3-1/8	3.364	1.500	.318	.200	10.20	---------	---------	---------	---------	---------	2.728	1.100	.636	.400	20.40
3-1/2 x 2	4.000	2.375	3-3/4	3-1/4	3.364	1.939	.318	.218	10.32	---------	---------	---------	---------	---------	2.728	1.503	.636	.436	20.64
3-1/2 x 2-1/2	4.000	2.875	3-3/4	3-1/2	3.364	2.323	.318	.276	10.56	---------	---------	---------	---------	---------	2.728	1.771	.636	.552	21.12
3-1/2 x 3	4.000	3.500	3-3/4	3-5/8	3.364	2.900	.318	.300	10.80	---------	---------	---------	---------	---------	2.728	2.300	.636	.600	21.60
4 x 1-1/2	4.500	1.900	4-1/8	3-3/8	3.826	1.500	.337	.200	14.28	3.438	1.338	.531	.281	22.56	3.152	1.100	.674	.400	28.56
4 x 2	4.500	2.375	4-1/8	3-1/2	3.826	1.939	.337	.218	14.45	3.438	1.689	.531	.343	22.83	3.152	1.503	.674	.436	28.90
4 x 2-1/2	4.500	2.875	4-1/8	3-3/4	3.826	2.323	.337	.276	14.62	3.438	2.125	.531	.375	23.10	3.152	1.771	.674	.552	29.24
4 x 3	4.500	3.500	4-1/8	3-7/8	3.826	2.900	.337	.300	14.96	3.438	2.624	.531	.438	23.63	3.152	2.300	.674	.600	29.92
4 x 3-1/2	4.500	4.000	4-1/8	4	3.826	3.364	.337	.318	15.30	---------	--------	---------	---------	---------	3.152	2.728	.674	.636	30.60

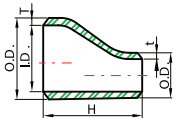
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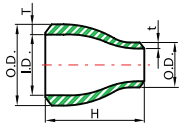


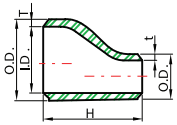


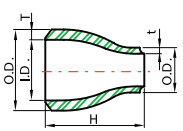












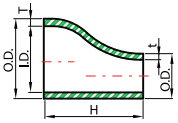
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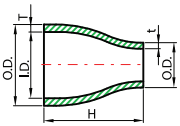
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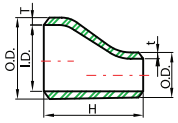
Nominal Pipe Size Large End X Small End	Outside Diameter Large End (O.D.)	Outside Diameter Small End (O.D)	Length (H)	Schedule 5S					Schedule 10S					Schedule 40S				
				Inside Diameter Large End (I.D.)	Inside Diameter Small End (I.D.)	Wall Thickness Large End (T)	Wall Thickness Small End (t)	Approximate Weight * *	Inside Diameter Large End (I.D.)	Inside Diameter Small End (I.D.)	Wall Thickness Large End (T)	Wall Thickness Small End (t)	Approximate Weight * *	Inside Diameter Large End (I.D.)	Inside Diameter Small End (I.D.)	Wall Thickness Large End (T)	Wall Thickness Small End (t)	Approximate Weight * *
3/4 x 3/8	1.050	.675	1-1/2	.920	.545	.065	.065	.15	.884	.545	.083	.065	.20	.824	.493	.113	.091	.27
3/4 x 1/2	1.050	.840	1-1/2	.920	.710	.065	.065	.17	.884	.674	.083	.083	.22	.824	.622	.113	.109	.31
1 x 3/8	1.315	.675	2	1.185	.545	.065	.065	.16	1.097	.545	.109	.065	.21	1.049	.493	.133	.091	.33
1 x 1/2	1.315	.840	2	1.185	.710	.065	.065	.16	1.097	.674	.109	.083	.27	1.049	.622	.133	.109	.34
1 x 3/4	1.315	1.050	2	1.185	.920	.065	.065	.17	1.097	.884	.109	.083	.29	1.049	.824	.133	.113	.36
1-1/4 x 1/2	1.660	.840	2	1.530	.710	.065	.065	.21	1.442	.674	.109	.083	.35	1.380	.622	.140	.109	.46
1-1/4 x 3/4	1.660	1.050	2	1.530	.920	.065	.065	.22	1.442	.884	.109	.083	.39	1.380	.824	.140	.113	.49
1-1/4 x 1	1.660	1.315	2	1.530	1.185	.065	.065	.22	1.442	1.097	.109	.109	.39	1.380	1.049	.140	.133	.49
1-1/2 x 1/2	1.900	.840	2-1/2	1.770	.710	.065	.065	.23	1.682	.674	.109	.083	.37	1.610	.622	.145	.109	.50
1-1/2 x 3/4	1.900	1.050	2-1/2	1.770	.920	.065	.065	.24	1.682	.884	.109	.083	.39	1.610	.824	.145	.113	.52
1-1/2 x 1	1.900	1.315	2-1/2	1.770	1.185	.065	.065	.25	1.682	1.097	.109	.109	.43	1.610	1.049	.145	.133	.58
1-1/2 x 1-1/4	1.900	1.660	2-1/2	1.770	1.530	.065	.065	.27	1.682	1.442	.109	.109	.46	1.610	1.380	.145	.140	.62
2 x 3/4	2.375	1.050	3	2.245	.920	.065	.065	.33	2.157	.884	.109	.083	.56	2.067	.824	.154	.113	.80
2 x 1	2.375	1.315	3	2.245	1.185	.065	.065	.37	2.157	1.097	.109	.109	.62	2.067	1.049	.154	.133	.89
2 x 1-1/4	2.375	1.660	3	2.245	1.530	.065	.065	.40	2.157	1.442	.109	.109	.67	2.067	1.380	.154	.140	.96
2 x 1-1/2	2.375	1.900	3	2.245	1.770	.065	.065	.41	2.157	1.682	.109	.109	.69	2.067	1.610	.154	.145	.99
2-1/2 x 1	2.875	1.315	3-1/2	2.709	1.185	.083	.065	.56	2.635	1.097	.120	.109	.83	2.469	1.049	.203	.133	1.42
2-1/2 x 1-1/4	2.875	1.660	3-1/2	2.709	1.530	.083	.065	.64	2.635	1.442	.120	.109	.95	2.469	1.380	.203	.140	1.61
2-1/2 x 1-1/2	2.875	1.900	3-1/2	2.709	1.770	.083	.065	.67	2.635	1.682	.120	.109	.98	2.469	1.610	.203	.145	1.67
2-1/2 x 2	2.875	2.375	3-1/2	2.709	2.245	.083	.065	.70	2.635	2.157	.120	.109	1.03	2.469	2.067	.203	.154	1.76
3 x 1	3.500	1.315	3-1/2	3.334	1.185	.083	.065	.70	3.260	1.097	.120	.109	1.03	3.068	1.049	.216	.133	1.81
3 x 1-1/4	3.500	1.660	3-1/2	3.334	1.530	.083	.065	.70	3.260	1.442	.120	.109	1.03	3.068	1.380	.216	.140	1.86
3 x 1-1/2	3.500	1.900	3-1/2	3.334	1.770	.083	.065	.78	3.260	1.682	.120	.109	1.13	3.068	1.610	.216	.145	2.07
3 x 2	3.500	2.375	3-1/2	3.334	2.245	.083	.065	.83	3.260	2.157	.120	.109	1.21	3.068	2.067	.216	.154	2.20
3 x 2-1/2	3.500	2.875	3-1/2	3.334	2.709	.083	.083	.90	3.260	2.635	.120	.120	1.30	3.068	2.469	.216	.203	2.38
3-1/2 x 1-1/4	4.000	1.660	4	3.834	1.530	.083	.065	.93	3.760	1.442	.120	.109	1.37	3.548	1.380	.226	.140	2.60
3-1/2 x 1-1/2	4.000	1.900	4	3.834	1.770	.083	.065	.99	3.760	1.682	.120	.109	1.46	3.548	1.610	.226	.145	2.76
3-1/2 x 2	4.000	2.375	4	3.834	2.245	.083	.065	1.06	3.760	2.157	.120	.109	1.57	3.548	2.067	.226	.154	2.97
3-1/2 x 2-1/2	4.000	2.875	4	3.834	2.709	.083	.083	1.17	3.760	2.635	.120	.120	1.72	3.548	2.469	.226	.203	3.25
3-1/2 x 3	4.000	3.500	4	3.834	3.334	.083	.083	1.20	3.760	3.260	.120	.120	1.77	3.548	3.068	.226	.216	3.35
4 x 1-1/2	4.500	1.900	4	4.334	1.770	.083	.065	1.05	4.260	1.682	.120	.109	1.50	4.026	1.610	.237	.145	3.00
4 x 2	4.500	2.375	4	4.334	2.245	.083	.065	1.21	4.260	2.157	.120	.109	1.73	4.026	2.067	.237	.154	3.47
4 x 2-1/2	4.500	2.875	4	4.334	2.709	.083	.083	1.28	4.260	2.635	.120	.120	1.83	4.026	2.469	.237	.203	3.66
4 x 3	4.500	3.500	4	4.334	3.334	.083	.083	1.34	4.260	3.260	.120	.120	1.92	4.026	3.068	.237	.216	3.84
4 x 3-1/2	4.500	4.000	4	4.334	3.834	.083	.083	1.38	4.260	3.760	.120	.120	1.98	4.026	3.548	.237	.226	3.97

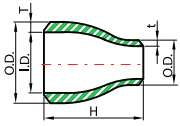


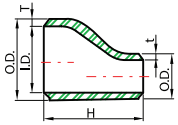


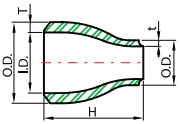












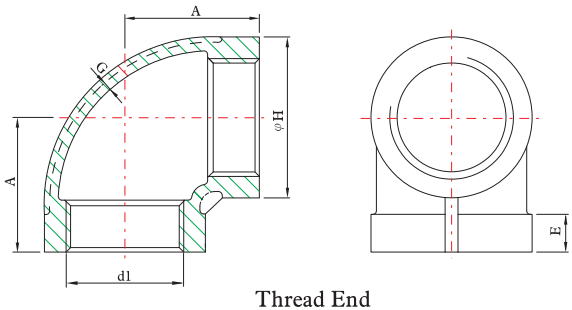
DIMENSIONS

unit : inch / lb

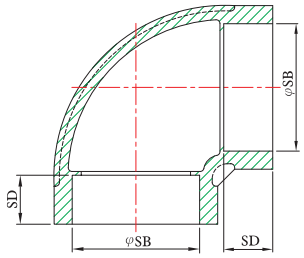
Nominal Pipe Size Large End X Small End	Outside Diameter Large End (O.D.)	Outside Diameter Small End (O.D)	Length (H)	Schedule 80S					Schedule 160					XX Strong Wall				
				Inside Diameter Large End (I.D.)	Inside Diameter Small End (I.D.)	Wall Thickness Large End (T)	Wall Thickness Small End (t)	Approximate Weight **	Inside Diameter Large End (I.D.)	Inside Diameter Small End (I.D.)	Wall Thickness Large End (T)	Wall Thickness Small End (t)	Approximate Weight **	Inside Diameter Large End (I.D.)	Inside Diameter Small End (I.D.)	Wall Thickness Large End (T)	Wall Thickness Small End (t)	Approximate Weight **
3/4x3/8	1.050	.675	1-1/2	.742	.423	.154	.126	.37	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------
3/4x1/2	1.050	.840	1-1/2	.742	.546	.154	.147	.40	.612	.466	.219	.187	.55	.434	.252	.308	.294	.80
1x3/8	1.315	.675	2	.957	.423	.179	.126	.42	---------	-------	---------	---------	-------	---------	---------	---------	---------	---------
1x1/2	1.315	.840	2	.957	.546	.179	.147	.44	.815	.466	.250	.187	.57	.599	.252	.358	.294	.88
1x3/4	1.315	1.050	2	.957	.742	.179	.154	.49	.815	.612	.250	.219	.61	.599	.434	.358	.308	.98
1-1/4 x 1/2	1.660	.840	2	1.278	.546	.191	.147	.52	1.160	.466	.250	.187	.67	.896	.252	.382	.294	1.04
1-1/4 x 3/4	1.660	1.050	2	1.278	.742	.191	.154	.56	1.160	.612	.250	.219	.73	.896	.434	.382	.308	1.12
1-1/4 x 1	1.660	1.315	2	1.278	.957	.191	.179	.59	1.160	.815	.250	.250	.82	.896	.599	.382	.358	1.18
1-1/2 x 1/2	1.900	.840	2-1/2	1.500	.546	.200	.147	.68	1.338	.466	.281	.187	.95	1.100	.252	.400	.294	1.36
1-1/2 x 3/4	1.900	1.050	2-1/2	1.500	.742	.200	.154	.71	1.338	.612	.281	.219	.99	1.100	.434	.400	.308	1.42
1-1/2 x 1	1.900	1.315	2-1/2	1.500	.957	.200	.179	.74	1.338	.815	.281	.250	1.03	1.100	.599	.400	.358	1.48
1-1/2 x 1-1/4	1.900	1.660	2-1/2	1.500	1.278	.200	.191	.80	1.338	1.160	.281	.250	1.12	1.100	.896	.400	.382	1.60
2 x 3/4	2.375	1.050	3	1.939	.742	.218	.154	1.11	1.689	.612	.343	.219	1.74	1.503	.434	.436	.308	2.22
2 x 1	2.375	1.315	3	1.939	.957	.218	.179	1.18	1.689	.815	.343	.250	1.85	1.503	.599	.436	.358	2.36
2 x 1-1/4	2.375	1.660	3	1.939	1.278	.218	.191	1.27	1.689	1.160	.343	.250	1.99	1.503	.896	.436	.382	2.54
2 x 1-1/2	2.375	1.900	3	1.939	1.500	.218	.200	1.30	1.689	1.338	.343	.281	2.04	1.503	1.100	.436	.400	2.60
2-1/2 x 1	2.875	1.315	3-1/2	2.323	.957	.276	.179	1.92	2.125	.815	.375	.250	2.59	1.771	.599	.552	.358	3.84
2-1/2 x 1-1/4	2.875	1.660	3-1/2	2.323	1.278	.276	.191	1.98	2.125	1.160	.375	.250	2.67	1.771	.896	.552	.382	3.96
2-1/2 x 1-1/2	2.875	1.900	3-1/2	2.323	1.500	.276	.200	2.07	2.125	1.338	.375	.281	2.79	1.771	1.100	.552	.400	4.14
2-1/2 x 2	2.875	2.375	3-1/2	2.323	1.939	.276	.218	2.26	2.125	1.689	.375	.343	3.05	1.771	1.503	.552	.436	4.52
3 x 1	3.500	1.315	3-1/2	2.900	.957	.300	.179	2.39	2.624	.815	.438	.250	3.32	2.300	.599	.600	.358	4.76
3 x 1-1/4	3.500	1.660	3-1/2	2.900	1.278	.300	.191	2.51	2.624	1.160	.438	.250	3.63	2.300	.896	.600	.382	5.02
3 x 1-1/2	3.500	1.900	3-1/2	2.900	1.500	.300	.200	2.66	2.624	1.338	.438	.281	3.85	2.300	1.100	.600	.400	5.32
3 x 2	3.500	2.375	3-1/2	2.900	1.939	.300	.218	2.85	2.624	1.689	.438	.343	4.13	2.300	1.503	.600	.436	5.70
3 x 2-1/2	3.500	2.875	3-1/2	2.900	2.323	.300	.276	3.28	2.624	2.125	.438	.375	4.75	2.300	1.771	.600	.552	6.56
3-1/2 x 1-1/4	4.000	1.660	4	3.364	1.278	.318	.191	3.53	---------	-------	---------	---------	-------	2.728	.896	.636	.382	7.06
3-1/2 x 1-1/2	4.000	1.900	4	3.364	1.500	.318	.200	3.69	---------	-------	---------	---------	-------	2.728	1.100	.636	.400	7.38
3-1/2 x 2	4.000	2.375	4	3.364	1.939	.318	.218	3.87	---------	-------	---------	---------	-------	2.728	1.503	.636	.436	7.74
3-1/2 x 2-1/2	4.000	2.875	4	3.364	2.323	.318	.276	4.21	---------	-------	---------	---------	-------	2.728	1.771	.636	.552	8.42
3-1/2 x 3	4.000	3.500	4	3.364	2.900	.318	.300	4.46	---------	-------	---------	---------	-------	2.728	2.300	.636	.600	8.92
4 x 1-1/2	4.500	1.900	4	3.826	1.500	.337	.200	4.18	3.438	1.338	.531	2 81	6.56	3.152	1.100	.674	.400	8.36
4 x 2	4.500	2.375	4	3.826	1.939	.337	.218	4.31	3.438	1.689	.531	.343	6.76	3.152	1.503	.674	.436	8.62
4 x 2-1/2	4.500	2.875	4	3.826	2.323	.337	.276	4.83	3.438	2.125	.531	.375	7.58	3.152	1.771	.674	.552	9.66
4 x 3	4.500	3.500	4	3.826	2.900	.337	.300	5.14	3.438	2.624	.531	.438	8.07	3.152	2.300	.674	.600	10.28
4 x 3-1/2	4.500	4.000	4	3.826	3.364	.337	.318	5.33	---------	-------	---------	---------	-------	3.152	2.728	.674	.636	10.66

90° ELBOWS BANDED EQUAL





Thread End



Socket-Weld End

DESIGN FEATURES:

- THREAD: NPT
- CF8 (304) & CF8M (316)
- MEET MSS-SP114

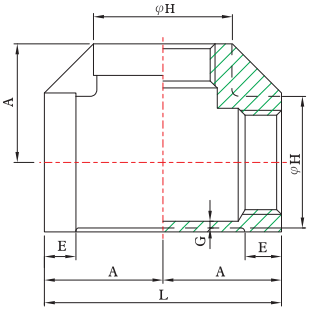
DIMENSIONS

unit : inch

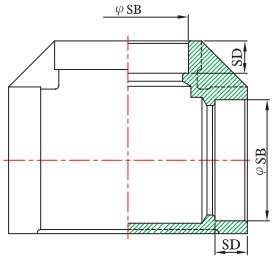
SIZE	A	E	G	H	SB	SD
1/8"	0.81	0.20	0.09	0.75	0.43	0.39
1/4"	0.81	0.20	0.09	0.84	0.56	0.39
3/8"	0.93	0.21	0.10	1.02	0.69	0.39
1/2"	1.12	0.25	0.10	1.21	0.85	0.39
3/4"	1.31	0.27	0.12	1.46	1.07	0.51
1"	1.50	0.30	0.13	1.77	1.33	0.51
1-1/4"	1.75	0.34	0.14	2.15	1.68	0.51
1-1/2"	1.93	0.37	0.15	2.43	1.92	0.51
2"	2.25	0.42	0.17	2.96	2.41	0.63
2-1/2"	2.68	0.48	0.21	3.31	2.91	0.63
3"	3.06	0.55	0.23	4.00	3.54	0.63
4"	3.81	0.66	0.26	5.06	4.55	0.75

TEES BANDED EQUAL





Thread End



Socket-Weld End

DESIGN FEATURES:

- THREAD: NPT
- CF8 (304) & CF8M (316)
- MEET MSS-SP114

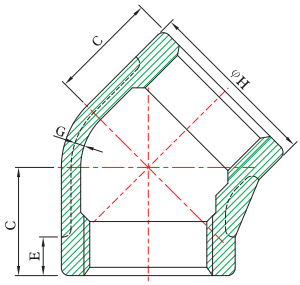
DIMENSIONS

UNIT : inch

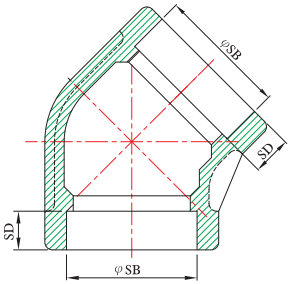
SIZE	A	E	G	H	L	SB	SD
1/8"	0.81	0.20	0.09	0.75	1.62	0.43	0.39
1/4"	0.81	0.20	0.09	0.84	1.62	0.56	0.39
3/8"	0.93	0.21	0.10	1.01	1.86	0.69	0.39
1/2"	1.12	0.25	0.10	1.20	2.24	0.85	0.39
3/4"	1.31	0.27	0.12	1.46	2.62	1.07	0.51
1"	1.50	0.30	0.13	1.77	3.00	1.33	0.51
1-1/4"	1.75	0.34	0.14	2.15	3.50	1.68	0.51
1-1/2"	1.93	0.37	0.15	2.43	3.86	1.92	0.51
2"	2.25	0.42	0.17	2.96	4.50	2.41	0.63
2-1/2"	2.68	0.48	0.21	3.31	5.36	2.91	0.63
3'	3.06	0.55	0.23	4.00	6.12	3.54	0.63
4"	3.81	0.66	0.26	5.06	7.62	4.55	0.75

45° ELBOWS BANDED EQUAL





Thread End



Socket-Weld End

DESIGN FEATURES:

- THREAD: NPT
- CF8 (304) & CF8M (316)
- MEET MSS-SP114

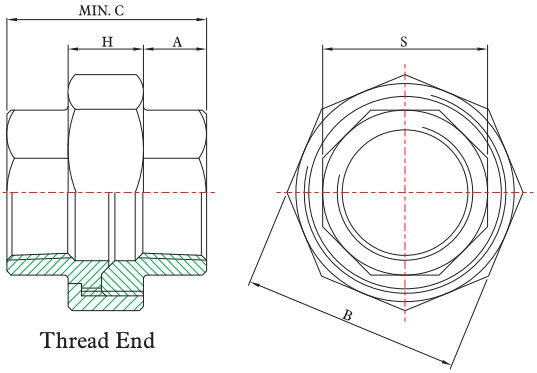
DIMENSIONS

unit : inch

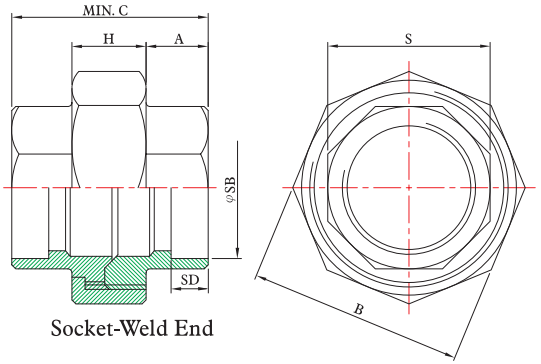
SIZE	C	E	G	H	SB	SD
1/8"	0.69	0.20	0.09	0.75	0.43	0.39
1/4"	0.69	0.20	0.09	0.84	0.56	0.39
3/8"	0.81	0.21	0.10	1.01	0.69	0.39
1/2"	0.87	0.25	0.10	1.20	0.85	0.39
3/4"	1.00	0.27	0.12	1.46	1.07	0.51
1"	1.12	0.30	0.13	1.77	1.33	0.51
1-1/4"	1.31	0.34	0.14	2.15	1.68	0.51
1-1/2"	1.43	0.37	0.15	2.43	1.92	0.51
2"	1.68	0.42	0.17	2.96	2.41	0.63
2-1/2"	1.93	0.48	0.21	3.31	2.91	0.63
3"	2.18	0.55	0.23	4.00	3.54	0.63
4"	2.62	0.66	0.26	5.06	4.55	0.75

UNIONS F/F





Thread End



Socket-Weld End

DESIGN FEATURES:

- THREAD: NPT
- CF8 (304) & CF8M (316)
- MEET MSS-SP114

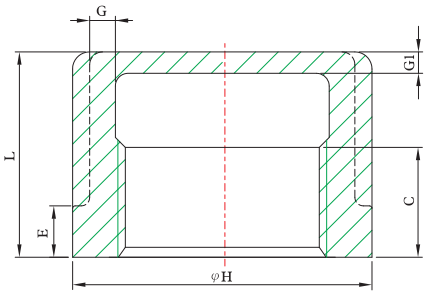
DIMENSIONS

UNIT : inch

SIZE	A	B	C	H	S	SB	SD
1/8"	0.34	1.14	1.26	0.59	0.71	0.43	0.39
1/4"	0.43	1.14	1.44	0.59	0.71	0.56	0.39
3/8"	0.52	1.42	1.61	0.59	0.89	0.69	0.39
1/2"	0.57	1.61	1.72	0.59	1.06	0.85	0.39
3/4"	0.67	1.93	1.94	0.61	1.26	1.07	0.51
1"	0.68	2.28	2.06	0.71	1.59	1.33	0.51
1-1/4"	0.72	2.67	2.26	0.84	1.97	1.68	0.51
1-1/2"	0.78	3.02	2.41	0.87	2.20	1.92	0.51
2"	0.89	3.60	2.75	0.98	2.72	2.41	0.63
2-1/2"	1.11	4.29	3.22	0.98	3.36	2.91	0.63
3'	1.18	4.92	3.50	1.15	3.94	3.54	0.63
4"	1.26	6.14	3.85	1.35	5.00	4.55	0.75

ROUND CAPS

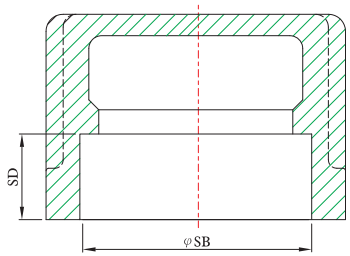




Thread End

DESIGN FEATURES:

- THREAD: NPT
- CF8 (304) & CF8M (316)
- MEET MSS-SP114



Socket-Weld End

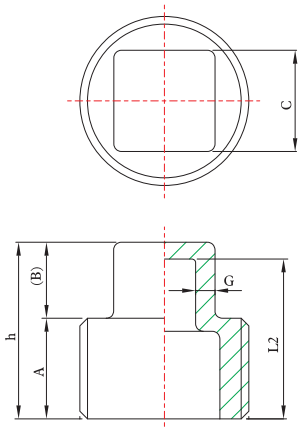
DIMENSIONS

UNIT : inch

SIZE	C	E	G	G1	H	L	SB	SD
1/8"	0.25	0.20	0.09	0.09	0.75	0.68	0.43	0.39
1/4"	0.32	0.20	0.09	0.09	0.84	0.68	0.56	0.39
3/8"	0.36	0.21	0.10	0.10	1.01	0.81	0.69	0.39
1/2"	0.43	0.25	0.10	0.12	1.20	0.93	0.85	0.39
3/4"	0.50	0.27	0.12	0.13	1.46	1.06	1.07	0.51
1"	0.58	0.30	0.13	0.15	1.77	1.31	1.33	0.51
1-1/4"	0.67	0.34	0.14	0.17	2.15	1.62	1.68	0.51
1-1/2"	0.70	0.37	0.15	0.19	2.43	1.62	1.92	0.51
2"	0.75	0.42	0.17	0.22	2.96	1.75	2.41	0.63
2-1/2"	0.92	0.48	0.21	0.25	3.31	2.00	2.91	0.63
3'	0.98	0.55	0.23	0.29	4.00	2.25	3.54	0.63
4"	1.08	0.66	0.26	0.36	5.06	2.50	4.55	0.75

SQUARE HEAD PLUGS





DESIGN FEATURES:

- THREAD: NPT
- CF8 (304) & CF8M (316)
- MEET MSS-SP114

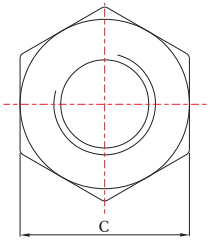
DIMENSIONS

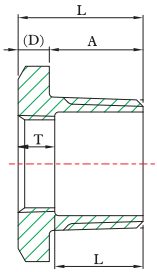
UNIT : inch

SIZE	A	(B)	C	L2	h	G
1/8"	0.37	0.24	0.28	-----	0.61	-----
1/4"	0.44	0.28	0.37	-----	0.72	-----
3/8"	0.48	0.31	0.44	-----	0.79	-----
1/2"	0.56	0.38	0.56	0.78	0.94	0.16
3/4"	0.63	0.44	0.63	0.89	1.07	0.18
1"	0.75	0.50	0.81	1.05	1.25	0.20
1-1/4"	0.80	0.56	0.94	1.15	1.37	0.22
1-1/2"	0.83	0.62	1.13	1.21	1.45	0.24
2"	0.88	0.68	1.31	1.30	1.56	0.26
2-1/2"	1.07	0.74	1.50	1.52	1.81	0.29
3'	1.13	0.80	1.69	1.62	1.93	0.31
4"	1.22	1.00	2.25	1.84	2.22	0.38

HEX BUSHINGS







DESIGN FEATURES:

- THREAD: NPT
- CF8 (304) & CF8M (316)
- MEET MSS-SP114

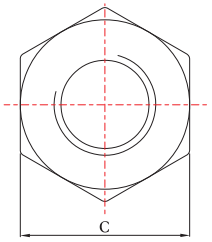
DIMENSIONS

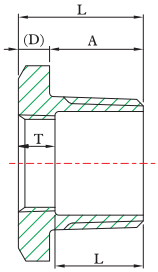
UNIT : inch

SIZE	A	C	D	L	T
1/4"*1/8"	0.44	0.63	0.12	0.56	0.30
3/8"*1/8"	0.50	0.87	0.16	0.66	0.30
3/8"*1/4"	0.50	0.87	0.16	0.66	-----
1/2"*1/8"	0.56	1.00	0.19	0.76	0.30
1/2"*1/4"	0.56	1.00	0.19	0.76	0.46
1/2"*3/8"	0.56	1.00	0.19	0.76	-----
3/4"*1/8"	0.62	1.24	0.22	0.84	0.30
3/4"*1/4"	0.62	1.24	0.22	0.84	0.46
3/4"*3/8"	0.62	1.24	0.22	0.84	0.46
3/4"*1/2"	0.62	1.24	0.22	0.84	-----
1"*1/8"	0.75	1.37	0.25	1.00	0.30
1"*1/4"	0.75	1.37	0.25	1.00	0.46
1"*3/8"	0.75	1.37	0.25	1.00	0.46
1"*1/2"	0.75	1.37	0.25	1.00	0.60
1"*3/4"	0.75	1.37	0.25	1.00	0.62
1 1/4"*1/4"	0.81	1.75	0.28	1.09	0.46
1 1/4"*3/8"	0.81	1.75	0.28	1.09	0.46
1 1/4"*1/2"	0.81	1.75	0.28	1.09	0.60
1 1/4"*3/4"	0.81	1.75	0.28	1.09	0.62
1 1/4"*1"	0.81	1.75	0.28	1.09	0.77
1 1/2"*1/4"	0.81	2.00	0.31	1.12	0.46
1 1/2"*3/8"	0.81	2.00	0.31	1.12	0.46
1 1/2"*1/2"	0.81	2.00	0.31	1.12	0.60
1 1/2"*3/4"	0.81	2.00	0.31	1.12	0.62
1 1/2"*1"	0.81	2.00	0.31	1.12	0.77
1 1/2"*1 1/4"	0.81	2.00	0.31	1.12	0.80

HEX BUSHINGS







DESIGN FEATURES:

- THREAD: NPT
- CF8 (304) & CF8M (316)
- MEET MSS-SP114

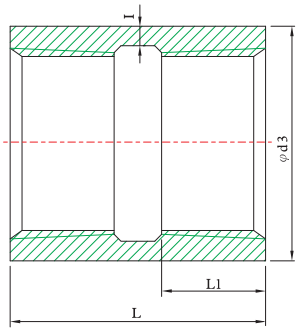
DIMENSIONS

UNIT : inch

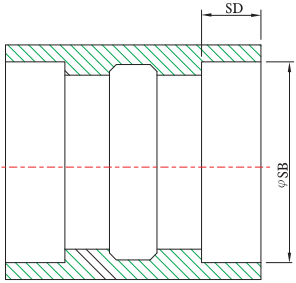
SIZE	A	C	D	L	T
2"*1/4"	0.88	2.50	0.34	1.22	0.46
2"*3/8"	0.88	2.50	0.34	1.22	0.46
2"*1/2"	0.88	2.50	0.34	1.22	0.60
2"*3/4"	0.88	2.50	0.34	1.22	0.62
2"*1"	0.88	2.50	0.34	1.22	0.77
2"*1 1/4"	0.88	2.50	0.34	1.22	0.80
2"*1 1/2"	0.88	2.50	0.34	1.22	0.81
2 1/2"*1/2"	1.06	3.00	0.38	1.44	0.65
2 1/2"*3/4"	1.06	3.00	0.38	1.44	0.62
2 1/2"*1"	1.06	3.00	0.38	1.44	0.75
2 1/2"*1 1/4"	1.06	3.00	0.38	1.44	0.80
2 1/2"*1 1/2"	1.06	3.00	0.38	1.44	0.81
2 1/2"*2"	1.06	3.00	0.38	1.44	0.85
3"*1/2"	1.12	3.74	0.41	1.54	0.65
3"*3/4"	1.12	3.74	0.41	1.54	0.62
3"*1"	1.12	3.74	0.41	1.54	0.75
3"*1 1/4"	1.12	3.74	0.41	1.54	0.79
3"*1 1/2"	1.12	3.74	0.41	1.54	0.81
3"*2"	1.12	3.74	0.41	1.54	0.85
3"*2 1/2"	1.12	3.74	0.41	1.54	1.23
4"*1"	1.25	4.63	0.60	1.85	0.77
4"*1 1/4"	1.25	4.63	0.60	1.85	0.79
4"*1 1/2"	1.25	4.63	0.60	1.85	0.81
4"*2"	1.25	4.63	0.60	1.85	0.85
4"*2 1/2"	1.25	4.63	0.60	1.85	1.23
4"*3"	1.25	4.63	0.60	1.85	1.33

COUPLINGS / SOCKETS





Thread End



Socket-Weld End

DESIGN FEATURES:

- THREAD: NPT
- CF8 (304) & CF8M (316)
- MEET MSS-SP114

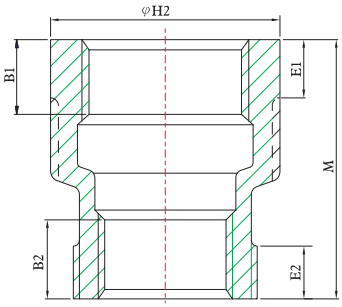
DIMENSIONS

UNIT : inch

SIZE	d3	I	L	L1	SB	SD
1/8"	0.75	0.09	1.00	0.25	0.43	0.39
1/4"	0.84	0.09	1.00	0.32	0.56	0.39
3/8"	1.01	0.10	1.12	0.36	0.69	0.39
1/2"	1.20	0.10	1.38	0.43	0.85	0.39
3/4"	1.46	0.12	1.50	0.50	1.07	0.51
1"	1.77	0.13	1.62	0.58	1.33	0.51
1-1/4"	2.15	0.14	2.00	0.67	1.68	0.51
1-1/2"	2.43	0.15	2.12	0.70	1.92	0.51
2"	2.96	0.17	2.50	0.75	2.41	0.63
2-1/2"	3.31	0.21	2.87	0.92	2.91	0.63
3"	4.00	0.23	3.22	0.98	3.54	0.63
4"	5.06	0.26	3.66	1.08	4.55	0.75

REDUCING COUPLINGS





DESIGN FEATURES:

- THREAD: NPT
- CF8 (304) & CF8M (316)
- MEET MSS-SP114

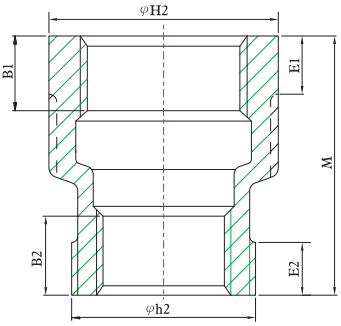
DIMENSIONS

UNIT : inch

SIZE	h2	H2	B1	B2	E1	E2	M
1/4"*1/8"	0.75	0.84	0.32	0.25	0.20	0.20	1.00
3/8"*1/8"	0.75	1.01	0.36	0.25	0.21	0.20	1.12
3/8"*1/4"	0.84	1.01	0.36	0.32	0.21	0.20	1.12
1/2"*1/8"	0.75	1.20	0.43	0.25	0.25	0.20	1.38
1/2"*1/4"	0.84	1.20	0.43	0.32	0.25	0.20	1.38
1/2"*3/8"	1.01	1.20	0.43	0.36	0.25	0.21	1.38
3/4"*1/8"	0.75	1.46	0.50	0.25	0.27	0.20	1.50
3/4"*1/4"	0.84	1.46	0.50	0.32	0.27	0.20	1.50
3/4"*3/8"	1.01	1.46	0.50	0.36	0.27	0.21	1.50
3/4"*1/2"	1.20	1.46	0.50	0.43	0.27	0.25	1.50
1"*1/8"	0.75	1.77	0.58	0.25	0.30	0.20	1.62
1"*1/4"	0.84	1.77	0.58	0.32	0.30	0.20	1.62
1"*3/8"	1.01	1.77	0.58	0.36	0.30	0.21	1.62
1"*1/2"	1.20	1.77	0.58	0.43	0.30	0.25	1.62
1"*3/4"	1.46	1.77	0.58	0.50	0.30	0.27	1.62
1 1/4"*1/4"	1.77	2.96	0.75	0.58	0.42	0.30	2.50
1 1/4"*3/8"	2.15	2.96	0.75	0.67	0.42	0.34	2.50
1 1/4"*1/2"	2.43	2.96	0.75	0.70	0.42	0.37	2.50
1 1/4"*3/4"	1.46	3.31	0.92	0.50	0.48	0.27	3.25
1 1/4"*1"	1.77	3.31	0.92	0.58	0.48	0.30	3.25
1 1/2"*1/4"	2.15	3.31	0.92	0.67	0.48	0.34	3.25
1 1/2"*3/8"	2.43	3.31	0.92	0.70	0.48	0.37	3.25
1 1/2"*1/2"	2.96	3.31	0.92	0.75	0.48	0.42	3.25
1 1/2"*3/4"	1.46	4.00	0.98	0.50	0.55	0.27	3.68

REDUCING COUPLINGS





DESIGN FEATURES:

- THREAD: NPT
- CF8 (304) & CF8M (316)
- MEET MSS-SP114

DIMENSIONS

UNIT : inch

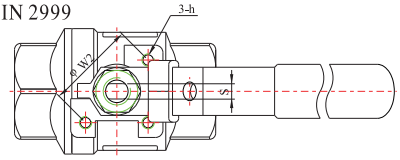
SIZE	h2	H2	B1	B2	E1	E2	M
1 1/2"*1	2.15	2.43	0.70	0.67	0.37	0.34	2.12
2"*1/4"	0.84	2.96	0.75	0.32	0.42	0.20	2.50
2"*3/8"	1.01	2.96	0.75	0.36	0.42	0.21	2.50
2"*1/2"	1.20	2.96	0.75	0.43	0.42	0.25	2.50
2"*3/4"	1.46	2.96	0.75	0.50	0.42	0.27	2.50
2"*1"	1.77	2.96	0.75	0.58	0.42	0.30	2.50
2"*1 1/4"	2.15	2.96	0.75	0.67	0.42	0.34	2.50
2"*1 1/2"	2.43	2.96	0.75	0.70	0.42	0.37	2.50
2 1/2"*3/4"	1.46	3.31	0.92	0.50	0.48	0.27	3.25
2 1/2"*1"	1.77	3.31	0.92	0.58	0.48	0.30	3.25
2 1/2"*1	2.15	3.31	0.92	0.67	0.48	0.34	3.25
2 1/2"*1	2.43	3.31	0.92	0.70	0.48	0.37	3.25
2 1/2"*2"	2.96	3.31	0.92	0.75	0.48	0.42	3.25
3"*3/4"	1.46	4.00	0.98	0.50	0.55	0.27	3.68
3"*1"	1.77	4.00	0.98	0.58	0.55	0.30	3.68
3"*1 1/4"	2.15	4.00	0.98	0.67	0.55	0.34	3.68
3"*1 1/2"	2.43	4.00	0.98	0.70	0.55	0.37	3.68
3"*2"	2.96	4.00	0.98	0.75	0.55	0.42	3.68
3"*2 1/2"	3.31	4.00	0.98	0.92	0.55	0.48	3.68
4"*1"	1.77	5.06	1.08	0.58	0.66	0.30	4.38
4"*1 1/4"	2.15	5.06	1.08	0.67	0.66	0.34	4.38
4"*1 1/2"	2.43	5.06	1.08	0.70	0.66	0.37	4.38
4"*2"	2.96	5.06	1.08	0.75	0.66	0.42	4.38
4"*2 1/2"	3.31	5.06	1.08	0.92	0.66	0.48	4.38
4"*3"	4.00	5.06	1.08	0.98	0.66	0.55	4.38

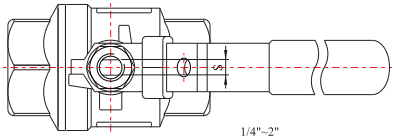
2PC FULL PORT 1000 WOG BALL VALVE, THREADED

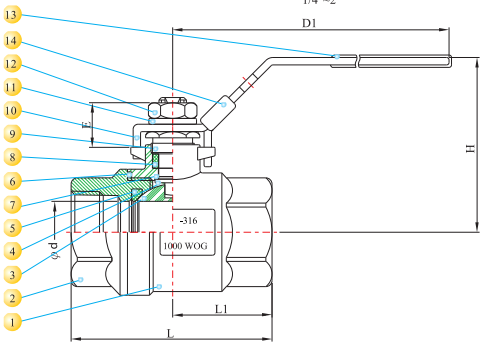


DESIGN FEATURES:

- Steam rating:150 psi WSP
- Blow-out-proof stem design
- Temperature Range: -50˚F to 450˚F
- Options: locking device
- TEST STANDARD:API 598
- Vacuum Service to 29" Hg
- NACE MR-0175 FULL COMPLIANCE
- Threaded Type:
  ANSI B1.20.1 (NPT)
  DIN 259/DIN 2999
  ISO 228
  BSP
  PT



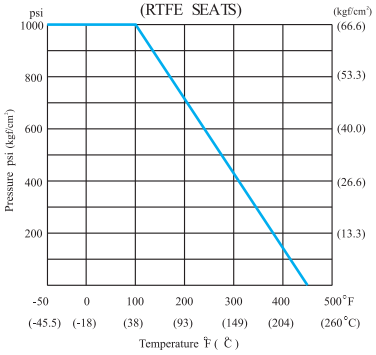




MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP	ASTM A351 Gr.CF8M	1
3	BALL	ASTM A351 Gr.CF8M	1
4	STEM	ASTM A276 Gr.316	1
5	SEAT	PTFE+15% G/F	2
6	GASKET	PTFE	1
7	THRUST WASHER	PTFE	1
8	PACKING	PTFE	1
9	GLAND	SS304	1
10	HANDLE	SS304	1
11	SPRING WASHER	SS304	1
12	HANDLE NUT	SS304	1
13	HANDLE SLEEVE	VINYL GRIP	1
14	LOCKING PLATE	SS304	1

PRESSURE TEMPERATURE RATINGS



DIMENSIONS

SIZE		d		E		L		L1		H		S		D1		W2		h	Cv	Weight	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	(Option)	Factor	Kg	Lb
1/4"	8	0.43	11.0	0.61	15.5	2.28	57.8	1.13	28.8	2.25	57.2	0.21	5.45	4.06	103				16	0.26	0.57
3/8"	10	0.49	12.5	0.61	15.5	2.28	57.8	1.13	28.8	2.25	57.2	0.21	5.45	4.06	103				16	0.24	0.53
1/2"	15	0.59	15.0	0.57	14.5	2.43	61.7	1.21	30.7	2.33	59.1	0.21	5.45	4.06	103				26	0.30	0.66
3/4"	20	0.79	20.0	0.83	21.0	2.76	70.1	1.38	35.0	2.46	62.6	0.21	5.45	4.06	103				55	0.42	0.93
1"	25	0.98	25.0	0.77	19.5	3.20	81.3	1.58	40.2	2.78	70.7	0.24	6.20	5.00	127				110	0.70	1.54
1 1/4"	32	1.26	32.0	1.09	27.9	3.78	96.0	1.86	47.2	3.00	76.2	0.24	6.20	5.00	127				180	1.10	2.42
1 1/2"	40	1.50	38.0	1.50	27.5	4.43	112.5	2.19	55.6	3.51	89.1	0.37	9.40	6.02	153				270	1.86	4.10
2"	50	2.00	50.8	1.08	26.7	4.96	126.0	2.46	62.4	3.87	98.2	0.37	9.40	7.60	193				500	2.85	6.28
2 1/2"	65	2.56	65.0	1.02	26.0	6.63	168.5	3.35	85.0	4.35	110.6	0.37	9.40	7.60	193	2.76	70	M8*P1.25	800	6.25	13.77
3"	80	3.15	80.0	1.50	38.0	7.54	191.4	3.78	95.9	4.88	124.0	0.47	12.00	10.98	279	4.02	102	M10*P1.5	1150	10.42	22.95
4"	100	3.94	100.0	1.89	48.0	8.52	216.5	4.26	108.3	6.63	168.5	0.63	16.00	13.19	335	4.02	102	M10*P1.5	2120	17.20	37.89

NOTE: WE RECOMMEND TO ADD 20%~25% SAFETY FACTORS FOR VALVE SERVICE CONDITION OR APPLICATION IF CUSTOMER WISH TO MOUNT AN ACTULATOR.

FIGURE:TC-01TK

OPERATING TORQUE

VALVE SIZE	1000/800WOG	
	N-m	Lbf-in
1/4"	2.94	26.04
3/8"	2.94	26.04
1/2"	3.92	34.72
3/4"	4.90	43.40
1"	7.36	65.10
1 1/4"	9.81	86.80
1 1/2"	17.65	156.24
2"	24.52	217.00

FIGURE:TC-02T、TC-02TM、TC-02X、TC-03T/B/S、TC-03K/03KC

OPERATING TORQUE

VALVE SIZE	1000WOG	
	N-m	Lbf-in
1/4"	3.0	26.55
3/8"	3.0	26.55
1/2"	4.5	39.83
3/4"	8.5	75.23
1"	11.0	97.35
1 1/4"	15.0	132.75
1 1/2"	24.0	212.40
2"	32.0	283.20
2 1/2"	45.0	398.25
3"	65.0	575.25
4"	100.0	885.00

FIGURE:TC-0612/0612C、TC-0612M/0612MC

OPERATING TORQUE

VALVE SIZE	1500/2000WOG	
	N-m	Lbf-in
1/4"	4.90	43.40
3/8"	4.90	43.40
1/2"	4.90	43.40
3/4"	5.90	52.08
1"	8.80	78.12
1 1/4"	14.70	130.20
1 1/2"	19.60	173.60
2"	34.30	303.80
2 1/2"	49.00	434.00
3"	58.80	520.80

FIGURE:TC-0712M

OPERATING TORQUE

VALVE SIZE	1500/2000WOG	
	N-m	Lbf-in
1/4"	3.09	27.34
3/8"	3.09	27.34
1/2"	4.12	36.46
3/4"	4.90	45.57
1"	7.72	68.36
1 1/4"	10.3	91.14
1 1/2"	18.54	164.05
2"	25.74	227.85
2 1/2"	30.89	273.42
3"	36.04	318.99

FIGURE:TC-2000

OPERATING TORQUE

VALVE SIZE	1500/2000WOG	
	N-m	Lbf-in
1/4"	4.9	43.40
3/8"	4.9	43.40
1/2"	5.9	52.08
3/4"	8.8	78.12
1"	14.7	130.20
1 1/4"	19.6	173.60
1 1/2"	34.3	303.80
2"	39.2	347.20

FIGURE:TC-3000T/B/S

OPERATING TORQUE

VALVE SIZE	1000WOG	
	N-m	Lbf-in
1/2"	4.50	39.83
3/4"	8.30	73.46
1"	10.70	94.70
1 1/4"	15.00	132.75
1 1/2"	24.00	212.40
2"	31.80	283.20
2 1/2"	45.00	398.25
3"	65.00	575.25
4"	100.00	885.00

FIGURE:TC-4000/4100 (FS)

OPERATING TORQUE

VALVE SIZE	1500/2000 WOG	
	N-m	Lbf-in
1/2"	5.88	52.08
3/4"	8.80	78.12
1"	14.70	130.20
1 1/4"	19.60	173.60
1 1/2"	39.23	347.20
2"	49.04	434.00

FIGURE:TC-3000TC、TC-3000TE

OPERATING TORQUE

VALVE SIZE	1000WOG	
	N-m	Lbf-in
1/2"	4.5	39.83
3/4"	10.70	94.70
1"	23.50	208.30
1 1/2"	31.80	281.30
2"	53.90	477.40
2 1/2"	78.50	694.40
3"	112.80	998.20
4"	148.00	1309.8

FIGURE:TC-9000

OPERATING TORQUE

VALVE SIZE	1000 WOG	
	N-m	Lbf-in
1/2"	3.96	35.00
3/4"	4.52	40.00
1"	9.04	80.00
1 1/4"	14.13	125.00
1 1/2"	20.34	180.00
2"	24.86	220.00

FIGURE:TC-6000/6100 (FS)

OPERATING TORQUE

VALVE SIZE	150#	
	N-m	Lbf-in
1"	8.0	70.80
1 1/2"	12.5	110.60
2"	24.0	212.40
2 1/2"	34.0	300.90
3"	59.0	522.20
4"	79.0	699.15
6"	137.0	1212.45

FIGURE:TC-0802A-150# TC-5000/5100 (FS)

OPERATING TORQUE

VALVE SIZE	150#	
	N-m	Lbf-in
1/2"	6.4	53.10
3/4"	8.0	70.80
1"	10.0	88.50
1 1/4"	12.5	110.60
1 1/2"	24.0	212.40
2"	30.0	265.50
2 1/2"	35.0	309.75
3"	60.0	531.00
4"	127.5	1128.40
5"	150.0	1327.50
6"	210.0	1858.50
8"	400.0	3540.00
10"	843.4	7464.80
12"	1529.9	13540.80

FIGURE:TC-0802A-300#

OPERATING TORQUE

VALVE SIZE	300#	
	N-m	Lbf-in
1/2"	9.3	82.46
3/4"	10.8	95.48
1"	13.7	121.52
1 1/4"	19.6	173.60
1 1/2"	36.3	321.16
2"	39.2	347.20
2 1/2"	42.2	373.24
3"	84.3	746.48
4"	138.3	1223.88
5"	255.0	2256.80
6"	407.3	3604.00
8"	495.3	4383.40

FIGURE:TC-WL、TC-WT

OPERATING TORQUE

VALVE SIZE	1000 WOG	
	N-m	Lbf-in
1/4"	3.92	34.72
3/8"	3.92	34.72
1/2"	7.91	70.00
3/4"	11.87	105.00
1"	15.48	137.00
1 1/4"	26.00	230.00
1 1/2"	35.60	315.00
2"	68.93	608.00

FIGURE:TC-7000 (FS)

OPERATING TORQUE

VALVE SIZE	150#	
	N-m	Lbf-in
1"	11.00	97.35
1 1/2"	26.40	233.64
2"	33.00	292.05
3"	66.00	584.10
4"	112.20	992.97

FIGURE:TC-WLT-DM TC-WTT-DM

OPERATING TORQUE

VALVE SIZE	1000 WOG	
	N-m	Lbf-in
1/4"	7.4	65.49
3/8"	7.4	65.49
1/2"	7.4	65.49
3/4"	14.8	130.98
1"	19.4	171.69
1 1/4"	25.4	224.79
1 1/2"	35.0	309.75
2"	85.0	752.25

FIGURE:TC-8000 TC-WL-BR TC-WT-BR

OPERATING TORQUE

VALVE SIZE	400/600WOG	
	N-m	Lbf-in
1/4"	6.78	60
3/8"	6.78	60
1/2"	6.78	60
3/4"	13.56	120
1"	18.08	160
1 1/4"	20.34	180
1 1/2"	29.38	260
2"	39.55	350
2 1/2"	45.20	400
3"	65.54	580
4"	71.19	630

FIGURE:TC-WLF、TC-WTF

OPERATING TORQUE

VALVE SIZE	150#	
	N-m	Lbf-in
2"	158.2	1400
2 1/2"	282.5	2500
3"	237.3	2100
4"	316.4	2800
6"	904.0	8000

FIGURE:TC-5300/5400-300#

OPERATING TORQUE

VALVE SIZE	300#	
	N-m	Lbf-in
1/2"	7.0	62.0
3/4"	11.0	97.4
1"	14.0	124.0
1 1/4"	25.0	221.3
1 1/2"	44.0	389.4
2"	54.0	477.9
2 1/2"	80.0	708.0
3"	108.0	955.8
4"	147.0	1301.0

TWO PIECE BALL VALVE

TCI ball valves have been designed and engineered to provide you with long lasting trouble free service when used in accordance with the instructions and specifications mentioned herein.

INSTALLATION

1.TCI two piece ball valves are bi-directional and may be installed for flow in either direction. During installation it is recommended that the valve ball be in the open position in order to prevent any possible damage.

2. After installation, cycle valve several times before putting into service.

3. Valves can't be used on unstable gases.

4.Max. working pressure:TC-02T:1000 psi (69bar),

TC-0612/TC-2000:1/4" ~1" is 2000 psi (138 bar) 1 1/4" ~3" is 1500 psi (103.5 bar)

5.Max. working temperature is 200℃(392℉).

OPERATION

1.A quarter turn of the handle clockwise closes the valve and a quarter turn counterclockwise fully opens the valve. Visual indication of the ball position is determined by the handle position: when the handle is in line with the piping the valve is open, crossline the valve is closed. Also, the stem flats indicate the direction of the ball port.

2.Soft seated ball valves perform best with the ball either fully open or fully closed in accordance with TCI Valve published pressure/temperature chart. Consult the factory regarding characteristics of the media or pressure drop for applications other than fully open or closed.

3.Any media that might solidify, crystallize or polymerize should not be allowed to stand in the ball valve cavities. In the event that this should happen, **DO NOT** forces the valve in either direction; disassemble and clean before resuming service.

4.Force required to break-away (i.e., force which must be exerted to begin motion of ball) will vary depen ding on the media, pressure and length of time between cycles.

The following data will act as a guide regarding break-away torques:

VALVE SIZE	RECOMMENDED BREAK-AWAY TORQUE
DN8 (1/4")	3.0 N-M
DN10 (3/8")	3.0 N-M
DN15 (1/2")	4.5 N-M
DN20 (3/4")	4.5 N-M
DN25 (1")	11.0 N-M
DN32 (1-1/4")	15.0 N-M
DN40 (1-1/2")	24.0 N-M
DN50 (2")	32.0 N-M
DN65 (2-1/2")	45.0 N-M
DN80 (3")	65.0 N-M
DN100 (4")	100.0 N-M

The above figures were obtained at 25 degrees C., 7 bar after 24 hours.

1.The only mechanism of the valve that is adjustable is the stem packing. If adjustment is required the gland may be taken up on by first loosening the handle nut. Adjustment of the gland should be no more than one quarter turn at a time. Over tightening will produce high torque and a shortened seal life.

Maintenance

A repair kit containing two seats, two body seals, one thrust washer and one stem packing is available for rebuilding each size and style valve.

Be sure to specify size, style, seat and seal materials when ordering. Optional components are also available (ball, stem, handle, etc.).

Refer to illustration on last page for part identification and assembly.

Rebuilding

WARNING- Ball Valves Can Trap Fluids in Ball Cavity When Closed

If the valve has been used to control hazardous media, it must be decontaminated before disassembly. It is recommended that the following steps are taken for safe removal and disassembly:

-Relieve the line pressure.

-Place the valve in half-open position and flush the line to remove any hazardous material from valve.

-All persons involved in the removal and disassembly of the valve should wear protective clothing such as face shield, gloves, apron, etc.

-A standard repair kit can be ordered which contains all necessary seats and seals to rebuild the valve. To order the repair kit, simply specify the valve size and figure number.

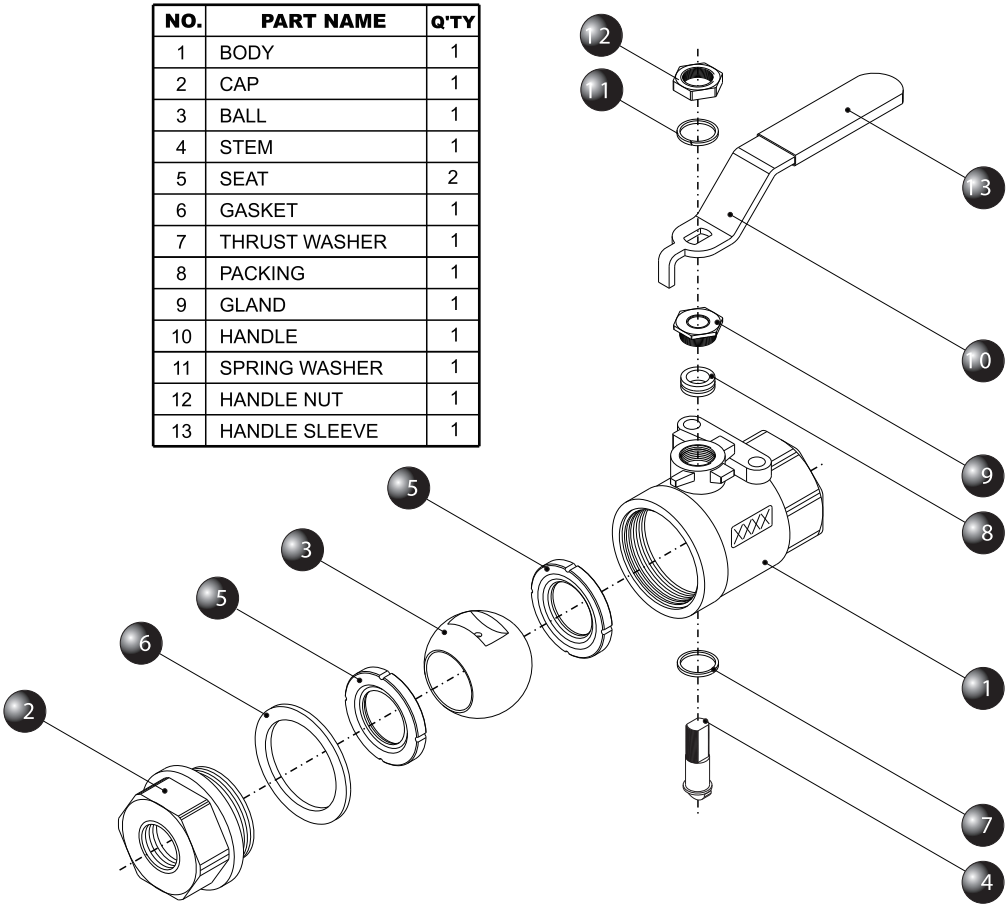
-If spare parts are necessary, include the complete valve code as given on the order, and then the part(s) that is (are) being ordered. For part description refer to the appropriate parts list.

CAUTION: Exercise caution that sealing and all surfaces are not damaged during disassembly, cleaning or reassembly.

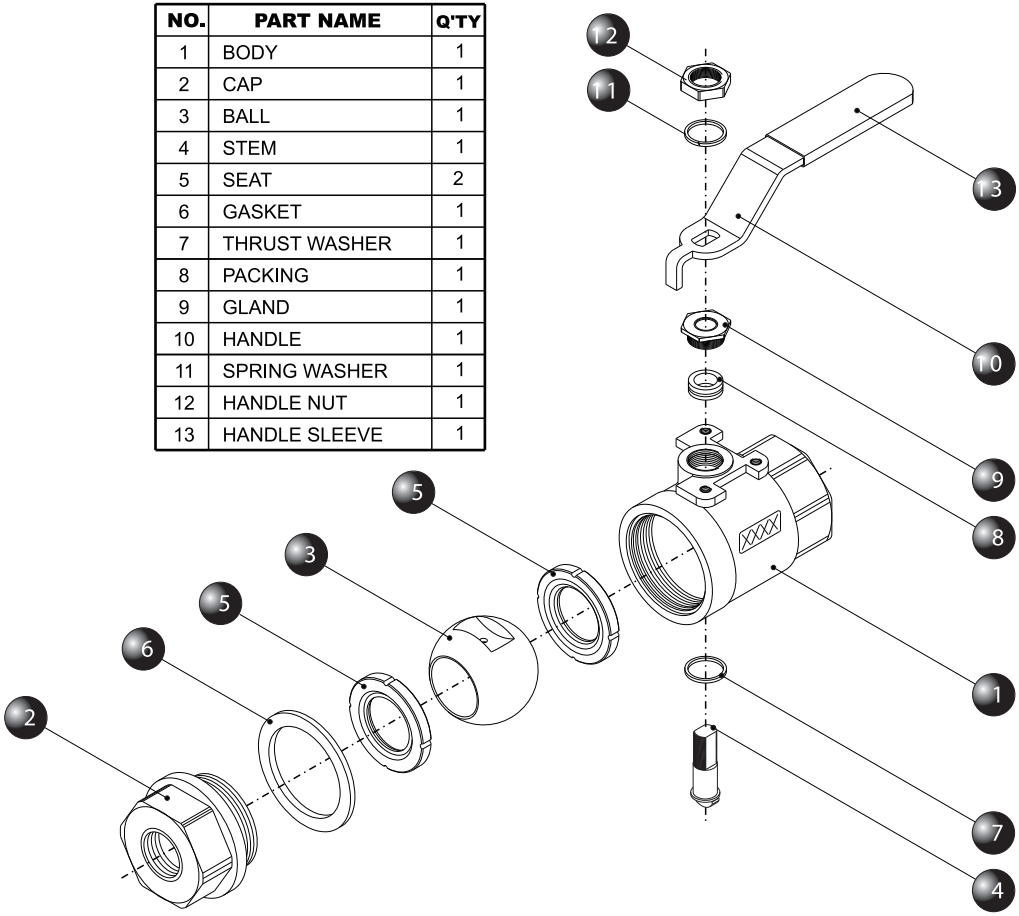
1. Stem flats should be in line with valve body before valve is removed from line.
2. Remove valve from pipeline. Place valve on a clean surface and secure by clamping or bolting.
3. Unscrew and take body and end cap apart.
4. Remove end seal and cap seat.
5. With stem flats rotated perpendicular to valve body, remove body seat and ball.
6. If it is necessary to replace stem packing, remove handle nut, spring washer, handle and gland. Lower stem into body cavity and remove stem packing.

7. Clean and inspect all components to be sure they are free from foreign matter and pit marks, paying attention to areas that must maintain a seal (the surface against which the seats are installed, finished diameter on stem, inside pipe end surface, ball). These areas must be free from scratches and pitting.
8. Light marring from the action of the ball against the seats is normal and will not affect the operation.
9. Once all components have been cleaned inspected and replaced as necessary, the valve may be rebuilt with the appropriate factory repair kit.
10. Slide new thrust washer over stem and insert assembly through ball cavity and fully up into stem hole recess.
11. Assemble new stem packing and screw the gland. Adjust stem packing to feel firm.
    DO NOT over-tighten.
12. Lightly lubricate ball and seats with a lubricant compatible with the media for which the service is intended.
13. Put into new body seat.
14. Replace ball into cavity with stem flats in perpendicular position, making sure that port holes are in desired position for operation. Once ball is engaged with stem, rotate to in-line position to prevent ball from falling out during assembly.
15. Insert new seat and end seal into cap. Screw end cap into body and tighten sufficiently to ensure it is fully seated.
16. If practical, check leak tightness before reinstalling valve inline.

NO.	PART NAME	Q'TY
1	BODY	1
2	CAP	1
3	BALL	1
4	STEM	1
5	SEAT	2
6	GASKET	1
7	THRUST WASHER	1
8	PACKING	1
9	GLAND	1
10	HANDLE	1
11	SPRING WASHER	1
12	HANDLE NUT	1
13	HANDLE SLEEVE	1



NO.	PART NAME	Q'TY
1	BODY	1
2	CAP	1
3	BALL	1
4	STEM	1
5	SEAT	2
6	GASKET	1
7	THRUST WASHER	1
8	PACKING	1
9	GLAND	1
10	HANDLE	1
11	SPRING WASHER	1
12	HANDLE NUT	1
13	HANDLE SLEEVE	1



Distributor



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